The Builder.

VOL. LXXXIX.—No. 3262. AUGUST 12, 1905.

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Constructional Steelwork.

SLOWLY but surely steel is continuing to make its way as a material of construction in building work. Except in residential houses, there are very few buildings in which structural steel is not employed in the form of stanchions, girders, and joints, and we find an increasing tendency on the part of the British architects to combine the steel members into a connected framework. This does not necessarily imply the acceptance of American methods of design or any radical deviation from approved architectural forms, but it certainly does mean that the valuable properties of the metal are being utilised in a more rational and more scientific manner than was the case not very long ago.

When an Amended Building Act for London has been passed through Parliament considerably more latitude will be permitted to architects, for it is morally certain that the new regulations will embody the recommendation of the Institute—that the strength of the steel framing should be properly recognised. Designers of buildings will then have the option of reducing the thickness of walls enclosing steel construction, and it can scarcely be doubted that the option will be largely exercised. Assuming this to be the case, a further impetus will be given to the employment of structural steel, and architects will find it more and more necessary to increase their stock of knowledge with regard to this valuable material and to the manner in which it may be applied with the greatest advantage.

At the same time, the advocates of concrete-steel will witness a great development in the use of that combination, but the popularity of steel applied in the form of substantial members is not likely to suffer serious diminution for many years to come.

Doubtless many will choose to erect buildings with walls of concrete reinforced by thin rods of steel, but walls of brick or stone with a background of solid steel will live long and die hard. It is not our present object to discuss the relative merits of the two systems, but rather to draw attention to some essential points connected with the design and erection of buildings in which steel is represented by familiar structural sections.

The subject is a large one, and although its primary essentials were fairly covered by a series of articles which appeared in our pages four or five years ago,* other aspects are equally deserving of attention. It is not sufficient for the designer to be familiar with the mathematical and theoretical side of structural design. He may readily acquire sufficient knowledge of the physical properties of steel and of methods of calculation, to enable him to design a structure on correct lines and to provide for strength and stability. But, to qualify himself for economical design, practical knowledge is essential. The best way of acquiring such knowledge is in the workshop, where most of our leading civil engineers received a large part of their training. But architects have necessarily to deal with so many branches of technical work that a lifetime might easily be devoted to practical training if an apprenticeship had to be served in every department. Hence, so far as outlying departments of architectural practice are concerned, effort is concentrated chiefly upon the development of a capacity for dealing broadly with the main principles of design and a facility for grasping the essential details of construction. Those of our readers who desire some further insight into the methods followed in the workshop and erecting yard of the structural engineer may be recommended to read a recent work by Mr. A. W. Farnsworth, which deals particularly with the practical aspect of constructional steelwork.* The book to which we refer is intended to afford to designers generally an indication of what should be embodied in their creations. If the author succeeds in making clear to the designer the methods of the practical engineer, he will have performed an excellent service to both parties, for nothing is more conducive to waste of time and money than the drawings and specifications of those who have imperfect knowledge of the processes by which their requirements must be fulfilled.

Mr. Farnsworth has divided his subject-

* The *Builder*, vol. lxxviii.

* "Constructional Steelwork: Being Notes on the Practical Aspect and the Principles of Design, together with an Account of the Present Methods and Tools of Manufacture." By A. W. Farnsworth. London: Charles Griffin & Co., Ltd. 1905.

matter into two parts:—(1) Practical Designing and (2) Practical Shop Work. We shall now refer in proper order to some of the more important points in each of these main divisions.

"Ideal Designing" is the text of the first chapter, and in this the author does well to call attention to the common fault of putting blind faith in mathematics. The growth of this defect is probably due, as suggested, to the division of work in such manner that the craftsman has ceased to be a designer, while the designer has drifted away from craftsmanship to the regions of pure theory. We have in our midst too many mathematicians posing as engineers, who fancy the calculus will solve all difficulties and who evolve wonderful theories which they vainly believe will upset or override practical experience. On the other hand, we have those who attach too much importance to their own interpretations of observed results. The great need of the present day is to bring together the designer and the man who has to realise designs in concrete form.

Workshop training in engineering laboratories cannot do much for the young engineer, and students turned out from universities and colleges have always to unlearn a great deal when they get into a shop where the cost of production is an essential factor. On the other hand, pure science cannot be of material value to the journeyman or master mechanic, except so far as it may enable him to perfect his methods of work. Of course, in large engineering establishments, where designing is an important branch of daily practice, the case is quite different. There machinery and structures are designed in a manner that puts to shame the efforts of men with a semi-technical training, but it too often happens that the chiefs of such organisations are compelled to carry out defective or extravagant designs prepared by consulting engineers, or the draughtsmen of consulting engineers having nothing more than office experience.

A hypothetical case put by Mr. Farnsworth shows that he realises the correctness of the views expressed above. He assumes that an engineer has to design a bridge involving the employment of thousands of tons of steel. Being aware that so many pounds must be paid for every ton of material used, he carries figures to their finest point, and works in materials, shapes, and sections upon the same basis. Yet the resulting design may be a wasteful one, because the forms of material and methods of construction specified may add so seriously to the cost of manufacture as to make the price per ton of finished work altogether excessive. Hence, as the author remarks, the designer has "economised his material and wasted his labour."

Work is too often designed in this way, sometimes through the ignorance of engineers, but more often by reason of the lack of knowledge on the part of their draughtsmen.

We readily admit that architects rarely offend in this direction, but the reason is the most unsatisfactory one that, as a general rule, they leave the question of design to commercial engineers. Among the few architects who understand the theoretical design of constructional steelwork, one or two may really possess the requisite practical knowledge, but this is very doubtful. Almost anyone can design a structure so that it shall be safe—the problem is to achieve the result with the minimum expenditure of material and labour.

This brings us to the second chapter, which is a homily on the supreme importance of economy. The author justly deprecates the ignorant attempts of some engineers whom the "cult of the beautiful" has led "to rosettes and stars and ogee sections, to elaborate piercings and geometrical patterns." He admits that the cry for beauty is not altogether responsible for these outrages on good taste, and attributes the blame rather to the engineer who attempts to pander to a taste he does not understand, and to aim at beauty of detail when he should have studied beauty of form.

Such beauty is consistent with true economy. Some of the finest stone bridges that have ever been built are embodiments alike of beauty and of economy. In fact, it may be said that they were economical for the same reason that they are beautiful. But the day of beauty for steel structures of architectural character has not yet dawned. So far as engineers are concerned, the attributes of beauty and economy are best attained when the work performed has been designed simply in accordance with mechanical and utilitarian principles, and without any attempt at decorative treatment. Architects, in whose province lies artistic design, may find it possible to carry matters a point beyond, but nothing can be done in this direction without a sound knowledge of first principles and adequate familiarity with the routine of the fitting and erecting shop.

In discoursing on "The Duty of the Designer," the author emphasises several points which we need scarcely indicate, preferring to refer our readers to the chapter where they are to be found. One argument, however, deserves special mention—namely, that the client's interest can only be properly safeguarded by men who possess, in addition to theoretical training, adequate personal knowledge of current working practice. The latter is the more essential inasmuch as methods of manufacture are advancing from year to year, and we quite concur with the opinion expressed by the author, that "the man who to-day bases his designs on his knowledge of workshop conditions a decade ago is wofully out of the race."

Only those who have been engaged in the commercial department of structural engineering can adequately realise how largely the price of work is influenced by the specification. As the author points out in Chapter V., "Every clause, every phrase, and word are carefully considered before a price is finally arrived at. Given the same drawings and details, the same identical design in every respect, and two specifications drawn up for it by two different engineers acting independently, and it is not too much to say that the prices under open tender by the same firm will in some cases vary as much as 5*l*. per ton."

We cannot go quite so far as Mr. Farnsworth in this estimate of monetary difference, but the view generally expressed in this passage is substantially correct. Of course, the specification is a very necessary document, for without it the various firms submitting tenders for a given work would not be able to base their prices upon a common standard. Some might allow for the highest class of work and others for very inferior work at minimum cost. The true function of the specification is to make clear precisely what is wanted in the way of materials and workmanship, and to define the conditions under which the contract is to be executed. When these essentials are embodied in a reasonable manner the specification is welcomed as a valuable aid by the maker. Unfortunately, many engineers have hobbies which are introduced into all their specifications, with the result that contracting firms are needlessly harried, and the client has to pay an increased price without any corresponding advantage.

Mr. Farnsworth advocates the adoption of a standardised form for the most important items in every specification for structural steelwork, so that manufacturers may be enabled to lay out their works and machinery to fulfil regular requirements with the smallest possible expenditure, and without disturbing the regular routine of operations. Standardisation of the kind has been adopted with much advantage in the United States, and, to illustrate this point, the author gives at the end of his book, a copy of the Manufacturers' Standard Specification, which is universally accepted in the United States as a satisfactory basis for structural engineering contracts. The details of this document are not precisely those to which we are accustomed in Great Britain, but it would be easy to prepare a similar standard conforming to British engineering practice. However stringent the requirements of such a specification might be, they would be far preferable to the varying demands of irresponsible designers. Several other fruitful causes of excessive cost directly traceable to existing methods of specification are fully discussed by the author, and it may be hoped that his advocacy may have some influence in helping to convince consulting engineers of the necessity for uniformity of practice in the direction indicated.

According to the system generally prevailing in this country, commercial engineers are not supposed to prepare working drawings, the theory being that these are invariably made by consulting engineers or the professional advisers of public authorities and private corporations. Yet those who are familiar with actual practice are well aware that thousands of draughtsmen all over the country are employed in the works of structural engineers to correct and extend drawings received, so as to make them suitable for their intended purpose. The reason why so many defective drawings are sent out is that engineers with purely office training in structural design have very little idea of what is actually necessary for the guidance of workmen, who, it must be remembered, are allowed no initiative, and are expected to do nothing more than to follow the

tracings handed to them. Foremost among the errors made in drawings are those relative to riveting. The theoretical designer seems to be quite ignorant of the fact that structural sections and plates can only be put together in a certain way, which at the same time governs the arrangement of the rivets.

Recognising the supreme importance of riveting in all built-up work, Mr. Farnsworth devotes Chapter VI. to an enumeration of the more essential points that should receive the attention of draughtsmen. He shows that in the design of plate girders the whole question of the riveting should be thoroughly threshed out before the drawing has advanced very far, and directs attention to the loss of time caused by the placing of stiffeners so as to interfere with the regular spacing of rivets. Still worse is the too frequent practice of leaving all thought of the riveting until the drawing is practically complete, the result generally being that rivets are shown in places where they cannot possibly be inserted. With imperfect drawings of the kind only two courses are open:—(1) To follow the drawings as far as practicable, which sometimes means bad work; and (2) to make new drawings for approval by the engineer, which means delay.

Chapter VII. deals with the choice of steel sections by the designer, and is intended to show how much the sizes of rolled bars and plates may affect the delivery and finish of the projected work. The author is quite correct in saying that "with average work the least difficult thing is to determine the stresses on members." This can be done by anyone possessing moderate knowledge of mechanical principles, but intimate acquaintance with the practice of the workshop is necessary for really economical design.

It is shown in this chapter that certain sections can be bought more cheaply and delivered more quickly than others. The reason is that the "rolling programme" at the works is invariably based upon sizes in greatest demand. Orders for other sizes have to accumulate until the quantity is sufficient to justify the expense of changing the rolls in the mill, or, if imperatively demanded, the customer will have to pay the extra expense involved. Hence it is often cheaper to waste a little metal by adopting regular stock sections than to pay for the rolling of special sections. Considerations such as these show that the designer must be in close touch with the manufacturer if his position is to be justified. Reduction of the number of different sizes in a given member, and the choice of the most convenient lengths of bars and plates are among the remaining matters dealt with in this chapter, which is thoroughly worthy of close study by architectural and engineering draughtsmen.

In Chapter VIII. Mr. Farnsworth discusses the question of finish—a most important factor in the determination of cost. If a designer has not been through the shops, it is extremely difficult for him to know which may be the cheaper of two classes of work, even if he happens to realise the fact that any difference of cost actually exists. Several stereotyped requirements are mentioned by way of illustration. For instance, certain standard drawings show the diagonals of lattice girders fitted carefully into the root and along the flanges of the main girder angles—a method of treatment probably costing about one shilling for each bar, and adding nothing to the strength of the construction. Similarly, it is often required that the ends of knee stiffeners shall be carefully dressed and filed up to remove the marks of the cold saw, the only result being that cost is largely increased. Some draughtsmen delight in curved connecting plates, forgetting that all curved lines are very expensive, and it is quite common to find two joggles demanded in one bar where one joggle would answer the same purpose. These and many other traditional fads inevitably tend to increase the cost of steelwork.

We can scarcely agree with Mr. Farnsworth in his advocacy of punching for rivet and other holes. It is not a sufficient argument to say that no controversy on the subject has arisen in the United States, where it is said by the author "the whole question the designer sets himself to settle is how to 'get there' in the quickest and cheapest way." There is no doubt that drilled holes are far superior to "punched and reamered" holes, and still more superior to simple punched holes. Which of of the three varieties should be adopted is a matter for the discretion of the designer. In many cases punching is quite good enough, especially when accurately performed by the aid of the most modern tools.

Perhaps the most flagrant waste of money in the way of finish is caused by the requirement that the edges of steel members which are to be buried in masonry shall be planed, chipped, dressed, and filed up as carefully as if they were to be exposed to view. Finish of the kind does not in the least add to the strength and permanence of the structure, and is of no use whatever. The same pedantry is often exercised in connexion with the design of roofs and railway bridges high above the heads of spectators, and even in bridges intended for remote Colonial territories. Extravagant folly of the kind to which we now refer is not to be found in the work of really competent engineers, who rely for effect upon broad outlines and make no attempt to embody what Mr. Farnsworth terms "engine work fitting" in small details. Those of our readers who have inspected the Forth Bridge from the water, and examined it closely from the footway of the platform, are in a position to confirm the opinion that the absence of minute finish in trivial details in no way detracts from the general appearance of that work when viewed from the nearest possible point on land or water.

Part I. concludes with two chapters on "Inspection" and one on "Estimating," the last-mentioned being addressed more particularly to commerical readers. At the same time it contains suggestions that ought to be of service to the architectural and engineering designer.

Part II. has the generic heading of "Practical Shop Work." It comprises seven chapters, wherein fully-detailed accounts are given of the operations conducted in the office, the template shop, the girder shop, and the smithy, and two chapters, one of which describes painting, marking, packing, and other final processes and the other embodies the chief points for consideration in connexion with the design and equipment of workshops for the fitting and erecting of constructional steelwork.

While heartily recommending this part of Mr. Farnsworth's book to the attention of our readers, we do not think it necessary to refer at length to its contents. Chapter XII., on "Office Routine," shows how the drawings of consulting engineers have to be examined, corrected, and extended before the actual working drawings can be made for use in the workshop, and we hope it may have the effect of bringing offenders to a sense of their shortcomings.

The remaining chapters describe methods of work and illustrate the types of modern machinery used for rolling, straightening, bending, sawing, shearing, planing, pressing, forging, welding, drilling, punching, and riveting structural steel sections. They also deal with marking for erection, painting, inspection, testing, packing, and various processes incidental to the execution of structural contracts.

The information collected in these chapters shows that the author possesses personal experience of the subject, and we feel confident that its publication will serve the useful purpose of making many designers acquainted with the details of workshop practice, thus enabling them to follow the progress of their ideas through the different manufacturing processes to final realisation.

The work should be a valuable help to architects and engineers alike, being calculated to make up in great measure for the lack of practical knowledge, which in its way is quite as important as familiarity with the theoretical principles of structural design.

EXTRAORDINARY TRAFFIC ON HIGHWAYS.

THE increase of building and what is termed in popular language the "development" of rural and suburban districts is making the question of the so-called "extraordinary" traffic on highways daily more important. This fact is clearly reflected in the official Law Reports, in which during the last few years quite a number of new cases on this point are to be found.

The law on this subject is in its basis statutory, though, like nearly all law in England, judicial decisions on the original statutory law have enlarged the original legal elements, and so in combination have laid down—for the present—something in the nature of a fairly clear body of rules. By the Highways and Locomotives Amendment Act, 1878, s. 23, it is enacted that "where . . . it appears to the authority which is liable . . . to repair any highway . . . extraordinary expenses have been incurred by such authority in repairing such highway by reason of the damage caused by excessive weight passing along the same or extraordinary traffic thereon such authority may recover : : :

from any person by whose order such weight or traffic has been conducted the amount of such expenses." This statute was followed after a lapse of twenty years by the Locomotives Act, 1898, which amended the section set out above by substituting for the words "by whose order" the words "by or in consequence of whose order." The result of this legislation has been to engraft on our highway law exceptional liabilities in the case of certain persons who use the highways. It is questionable whether this liability can be regarded as properly imposed. The taking of extraordinary or unusual traffic along a road is not an improper or illegal act in itself: it is a legitimate use of a public highway. In the year 1893, in the case of Hill *v.* Thomas, the Court of Appeal laid down this rule:—"Extraordinary traffic is really a carriage of articles over the road at either one or more times which is so exceptional in the quality or quantity of articles carried or in the mode or time of user of the road as substantially to alter and increase the burden imposed by ordinary traffic on the road and to cause damage and expense thereby beyond what is common." But, as already pointed out, there is no improper use of the road made, and it comes to this, that a man who for a time uses a road to an abnormal extent or, indeed, as we shall presently show, who permanently uses a road to a greater degree than before was customary has to pay for its upkeep. But though he may be thus using a highway apparently abnormally, he may not in the long run do more damage to a highway than two or three persons who use it more than their neighbours all the year round and reduce it by wear and tear and yet pay no more rates. As we all know, A, who has no horses, carriages, or carts, is rated for the support of the highways as much as B, whose business is carried on by means of carts and horses. Yet B pays no more highway rates than A; if, however, A proceeds to build a house and have his bricks and other materials carted over a section of a highway, he may be made liable to pay a sum for extraordinary traffic, which, as the schoolboy's Euclid says, "is absurd." The case of the Etherby Grange Coal Company *v.* the Auckland District Highway Board, which was decided by the Court of Appeal in 1893, illustrates this assertion, and also the point referred to above as to a permanence of such liability. It was admitted that the coal trade was the staple industry of the district in which the dispute arose and that the roads in the district other than the road the subject of litigation were used by coal owners for the cartage of their coals. This road, owing to new coal workings, was suddenly turned from a purely agricultural highway into a commercial highway. From 1887 to 1890 the cost for upkeep per mile of the road had been 10*l.* a year. In consequence of the extra traffic the cost went up between 1890 and 1892 to 25*l.* a mile. The question arose whether the comparison of expenditure, which is the chief test as to whether traffic is extraordinary or not, should be between the cost of the particular road before and at the time of the extra traffic or between the particular road and other roads in the district. It was held that only the road in question could be considered. Therefore, as already pointed out, a person or company may apparently become permanently liable for extraordinary traffic though it is only such as is found on other roads in the district.

This, then, is the first point—one of principle—which has to be considered, namely, should there be any special liability at all for extraordinary but quite legitimate traffic? Secondly, if there should, should the comparison be between the particular road only before and at the time of such traffic? The liability which at first sight seems reasonable is, when analysed, very doubtful, and seems to be contrary to the modern principle that the cost of the upkeep of highways should be borne by all the ratepayers of a locality. The point might be developed and discussed at much greater length than our space will permit, but it is obviously one which in any consideration or amendment of the Highway Act is of much importance.

There is yet another branch of the subject of considerable interest to many of our readers, since it primarily affects the liability of contractors. It arises on the meaning of the words "by or in consequence of whose order." It cannot, we may say at once, be considered as a point on which the law is quite settled, and it is pretty clear that liability may turn—if there is litigation—on findings of fact by judges or juries. The emendation of the law in 1898 by the substitution of the above words for those which were in the earlier Act "by whose order" was in consequence of the decision in the case of the Kent County Council *v.* Lord Gerard, which went up to the House of Lords, where it was decided that a building owner was not responsible for extraordinary traffic in the case of the carriage of materials for a house, which materials he had bought delivered on the spot, but that the contractor, on the contrary, was liable, because the building owner was not the person "by whose order" the extraordinary traffic had been carried on. In 1900 came the case of the Epsom Urban Council *v.* the London County Council, and in it the facts were that the County Council had contracted with Messrs. Kirk & Randall to carry out alterations and additions to an asylum, and for the purpose of carrying out this contract extraordinary traffic on a highway ensued. Mr. Justice Bigham held the London County Council to be liable because the traffic resulted in consequence of their order. We confess that the decision appears to be based on a sensible construction not only of the new words, but of their obvious intention. It is difficult, however, to reconcile this decision with that of a Divisional Court in 1902 in the case of the Egham Rural Council *v.* Gordon. Here the facts were that the defendant was about to build a house, and gave an order to a brick company for bricks to be delivered on the land where the house was to stand. This company, without his knowledge, arranged with a contractor to deliver the bricks by means of a traction engine and trucks, and it was admitted that the roads had been damaged by them. The County Court judge before whom the case was first tried held that the damage had not been caused in consequence of the order of the building owner, and his judgment was upheld by the High Court. The gist of the decision was that the words "in consequence of" must be interpreted "as a necessary consequence of." But Mr. Justice Bigham said in the previous case nothing about necessity, but "the consequence of the orders or contracts was that the traffic was conducted along the road," and therefore that the building owner was liable. The moment the word necessary is imported the object of the amendment of the Act of 1878 is gone, because unless a building owner gives a direct order to a contractor as to the manner in which material is to be carted the direct link is missing. On the whole, therefore, the law on this point seems to be in favour of the contractor, though it is also clear that it cannot be said to be without doubt.

There is another point to which a short reference may be made, namely, that the wear and tear of the road must be shown to result from the extraordinary traffic and not from a failure of the highway authority to maintain the road in proper condition. In other words, if the extra cost of the road can be shown to arise from a combination of causes, such as weather, bad management, and heavy traffic, the person who places this traffic on the road is not responsible. This appears to be the result of the very recent case, the Monmouthshire County Council *v.* Scott. This case did not, it should be said, arise on the question of liability for extraordinary expenses, but was a question of granting an injunction to prevent the defendant from committing a public nuisance by using the road at all. But the reasoning in the case is applicable to such cases as have already been mentioned in this article. One conclusion most people will, we think, come to: that the legislation and decisions on the question of extraordinary traffic show very clearly the need for a modern code of highway law.

NOTES.

Dock Amalgamation in the Thames.

THE recent authoritative announcement at the annual meeting of the London and India Docks Company that an amalgamation has been arranged between that company and the Millwall Docks Company is a practical step towards a more systematic management of the Port of London. In consequence of this arrangement the two sets of rival docks will be physically united, and the management will also be unified. Though, as we have said, this is a step, it is, however, only a step towards a better state of things. Unquestionably, the ideal to be aimed at is a port trust similar to the Mersey Dock and Harbour Board. The alternative to this is the transfer of the Thames as a port to a Government department—which would probably be considered undesirable by shipowners. It is, however, a ridiculous anomaly in these days that the docks and the river should be managed by separate authorities, and as to the river, a more unsatisfactory body in its composition than the Thames Conservancy cannot be imagined. But nothing definite or complete will be done until a new and vigorous Government

takes up the matter, determined to make London an up-to-date port.

Labour Disputes.

IT is most satisfactory to find it stated in the annual report of the Board of Trade relating to strikes and lockouts that 1904 was a record year for the small number of industrial stoppages, the workpeople affected being under 1 per cent. of the industrial population (exclusive of agricultural labourers and seamen) and the working time lost representing about one-seventh of a day per head. The disputes occasioned by refusal to work with non-union men and arising out of trades unions' principles also showed a considerable decrease. The working people are to be congratulated on the facts disclosed in this report. The year has not been one of commercial prosperity, and credit must be given for the spirit of conciliation shown in far from favourable conditions of trade. On former occasions we have pointed out that the number of trades disputes has shown a steady decrease since the decision by the House of Lords in the Taff Vale case; the influence of the irresponsible agitator has been lessened, and the spirit of conciliation has been fostered. It must also be remembered that the absence of strikes indirectly benefits the working classes, since the trades unions' funds have not to be frittered away in strike pay, but the unions are able to apply their funds to their sick pay and benevolent schemes, the organisation of which they so ably carry out.

The Ramsgate Tramway Accident.

IT would be difficult to find a more dangerous section of tramway track than that along the Madeira-road, Ramsgate. Not only is the gradient very steep, but the road has one or two particularly sharp curves. Under the most favourable conditions the safety of passengers hangs on the efficiency of the car brakes; but in rainy weather even the brakes are no safeguard, as the recent mishap shows. Considering that there is a far more practicable route towards Broadstairs, we wonder the line was ever sanctioned in its present position. This was by no means the first serious tramway accident in Ramsgate, and we are glad to find that the Board of Trade have decided to hold an inquiry on the subject.

Motorists and the Public.

THE case of Hargreaves *v.* Baldwin affords a testimonial to the ingenuity of motorists or their legal advisers, but it has been decided by the Divisional Court in a manner satisfactory to the public. The appellant was charged under section 1 sub-sect (1) of the Motor-Car Act with driving "on a public highway recklessly or negligently in a manner dangerous to the public, having regard to all the circumstances of the case, including the nature, use, and condition of the highway and the amount of the traffic which actually was at the time, or which might reasonably be expected to be, on the highway." For some reason, the words "or at a speed" were omitted from the charge, and the appellant's contention was that, since it had been decided that this section dealt with two separate offences, on the charge as laid no evidence could be given as to the speed. The Court negatived this contention, and it is difficult to see how the element of speed could be eliminated from the charge of reckless or negligent driving. In this case the car was attempting to pass another vehicle and several cyclists at a speed of not less than twenty miles an hour, and in avoiding it one of the cyclists was injured. It appears that the neglect to slow up was the negligence for which the defendant was convicted on the charge as laid.

Motor Vehicle Exhaust Gases.

USERS of London streets ought to be grateful to the Automobile Club for the efforts they are now making to discourage the emission of smoke and vapour from motor-cars. Most vehicles of this type are designed so as to discharge exhaust gases in the wrong direction. There is no reason why human beings and animals passing behind or following a car moving slowly along a crowded street should have offensive exhalations blown in their faces. The evil is much exaggerated when an excessive amount of oil is used for cylinder lubrication and when combustion is incompletely effected. Let us suppose, however, that all these matters were perfectly regulated. There would still remain the manufacture and distribution of carbon dioxide, an essentially unwholesome product, inseparable from the employment of internal combustion motors and every other form of heat engine. People talk about the insanitary horse, but the motor-car is just as bad in another direction, and, if mechanical traction is ever to become universal in London, it will be necessary to insist upon the use of electricity or some other innocuous source of motive power.

The Roads.

AT a recent meeting of the Cheshire County Council attention was drawn to the serious effect the dust nuisance as created by motor traffic was having upon house property adjoining main roads, and amongst the remedies suggested was a treatment of the roads with salt. The damage to house property is by no means confined to Cheshire, as throughout the country it has become practically impossible to let or sell houses fronting on main roads, but in the suggested treatment of the roads the general public will have to be considered and their interests protected. The treatment of the roads with salt would be injurious to health and very bad indeed for horses' hoofs. Londoners in winter have had bitter experience of this in time of snow, when salt has been used and a freezing mixture has been the result. The salt in damp weather keeps the roads moist, and may thus lay the dust, but the result is equally unpleasant to pedestrians and horse traffic, and the use of salt would become a serious nuisance.

Magnetic Separators.

WERNER VON SIEMENS suggested many years ago that electro magnets might be usefully employed in iron mining to separate the rich from the poor ores. Since his time many engineers have considered the problem, but it is only recently that magnetic separators have come into everyday use. In a very interesting paper in the *Engineering and Mining Journal* of New York Mr. Hamilton describes the revolution brought about in the Swedish iron industry by the recent developments of the electrical applications. The Grängesberg Mining Company, which possesses vast iron ranges in the northern parts of Sweden, has, owing to the proximity of unlimited water power, profited most by the use of electricity. The great bulk of the electrical horse-power transmitted from the waterfalls is utilised for the hoists, locomotives, air-compressors, power drills, etc., but some of it is now used for special ore-crushing machinery and magnetic separators. Most of the ore is taken from the depth of a thousand feet in trucks containing about four tons at a speed of 600 ft. per minute. After being crushed the ironstone falls into a Wenstrom magnetic separator, which separates the magnetic ore from the hematite and rock with absolute certainty and with the expenditure of very little power. The introduction of these separators, marks a great advance in the mining industry. The Grängesberg mines have been worked for several centuries, and hills of the poor ores which have been excavated have been dumped round the mines. With the aid of magnetic separators, it has now been found profitable to work the poor ores. They are put through a wet process of screening, and the magnetic ores are then picked out easily by the separator. The final ore when ready for shipment contains over 70 per cent. of iron. If the price of iron were ever to rise appreciably, it would be profitable to work through the hills of rejected ore a second time with more powerful separators.

Collapse of a Tall Building.

ALMOST entirely without premonition, the Meyer's store building at Albany, U.S.A., fell to the ground at nine o'clock on Tuesday morning, burying some 100 of the *employés* beneath the *débris*. It is feared that the loss of life will prove to be very serious, and it would have been more so if the disaster had occurred later in the day. The immediate cause of the collapse is said to have been the incredible folly of workmen—engaged in constructing a new front to the building—who had removed some of the main columns without inserting temporary substitutes. We cannot understand why workmen were allowed to tamper with so important a structure except under expert direction. That sort of thing would certainly not be allowed in England, and we are reluctant to believe that it was permitted in the present instance. Without exact particulars of the construction and of the extent to which the supporting members were removed, it would be impossible to draw any reliable conclusions. We are inclined to believe, however, that the columns must have been of cast iron, for if of mild steel they would have given some warning of impending failure, and it is not impossible that the complete destruction of the building might not have occurred. The collapse of the Hotel Darlington, New York, during construction about a year ago was due to defective and badly-erected cast-iron columns, which failed owing to lack

of lateral support, and the whole building crumpled up. Something of the same kind seems to have taken place at Albany, and, if we are correct in supposing that cast iron was used for the columns, there is additional reason for mistrusting this material, especially in connexion with high buildings of the skeleton type, where inferior workmanship, or anything altering the calculated stresses, produces results far more serious than those to be anticipated for mild steel.

Further Light on the Madrid Reservoir Failure.

SUBSEQUENTLY to the collapse of the concrete-steel reservoir at the Madrid waterworks in April last, it was observed that the main girders, connecting the columns of two other service reservoirs, were expanding under the influence of heat to such an extent that some of them had assumed a more or less serpentine form. Consequently many of the columns became seriously distorted, and after a few days some two hundred of these members were thrown down. This result occurred in June, but as access to the works had been strictly prohibited by the authorities, no personal casualties took place. The expansion was temporarily arrested by a reduction of the temperature, and, so far, no further destruction has occurred. It is highly probable, however, that the remaining columns are doomed. The girders in question extend continuously over a length of nearly 600 ft., and, as the range of temperature in Madrid is fully 65 deg. Fahr., it is easy to see that the expansion of concrete in these reservoirs constitutes a most important factor, which appears to have been overlooked by the designers of the concrete-steel construction.

Russell-street, Covent Garden.

OF the houses on the south side of Russell-street, which have been pulled down quite recently, No. 7 was the home in the earlier half of the XVIIIth century of Thomas Grignion, the celebrated watchmaker, his brother Charles, the line engraver, and his son Charles, the portrait painter and pupil of Cipriani, to whom Nelson sat at Palermo in 1798. Charles Grignion (the son) left England for Rome in 1782, and died at Leghorn in 1804; his uncle, Charles, removed to James-street, Covent Garden, and thence to Kentish Town, where he died in 1810, aged ninety-three years. The new buildings on the site, at the angle, west, of Wellington-street, will form an extension of the market premises, and are planned and designed for the Duke of Bedford by Messrs. Lander, Bedells, & Crompton. The frontage lines are to be rearranged, and the boundary fence in Russell-street is to be set back in alignment with No. 8, which (latterly the Caledonian coffee tavern) was the home of Tom Davies, actor and bookseller, who in his parlour there introduced Boswell to Dr. Johnson. The next house, No. 9, the Market House tavern, was Button's coffee-house, a resort in Addison's day of the wits who, after Dryden's death, migrated from Will's, by the corner, west, of Bow-street. Tom's coffee-house, No. 17, frequented by Cibber, Smollett, George Colman the elder, Johnson, and Arthur Murphy, was altered and its front was rebuilt forty years ago for the National Deposit Bank. Richard Haines continued Thomas West's business there during many years in the second half of the XVIIIth century, and Tom's survived until 1814. Some relics of the coffee-house, including Sir Nathaniel Dance's sketch-portrait of Haines, the club book and snuff box, were sold at Sotheby's in July, 1899. It appears as Allen's tea and colonial warehouse in a water-colour drawing, 1857, by T. Hosmer Shepherd.

Closed Churches.

A CORRESPONDENT recently complained in our contemporary the *Westminster Gazette*, that in a walking tour in Surrey he had found the village churches closed. He would have had a similar experience as to many churches in other counties. But the accusation must not be too sweeping; a number of churches all over England will be found open day by day, so that the archæologist has no difficulty in visiting them and examining points of interest. It is the experience of those who are responsible for the care of these open churches that no injury is done to them by the fact that they are open. It will generally also be found that in churches which are open to the public, monuments and brasses are better cared for than in churches which are shut except during the hours of service. The rector or vicar of a church which is open permits it, no doubt, first of all from a religious point of view, and, secondly, because he values the church as an historical and æsthetic object and is pleased that it should be seen by others. But the rector who keeps it closed is too often wanting in religious zeal, and is characterised by his ignorance of and indifference to historical monuments, which our mediæval village churches unquestionably are.

MAGAZINES AND REVIEWS.

THE *Art Journal* opens with an article, the first of a series, on the highly interesting subject of "Painters' Architecture," by Mr. Paul Waterhouse. Naturally, Mr. Waterhouse leaves out of his subject the painters who were also professedly architects, such as Michelangelo, Raphael, and Leonardo (though Raphael was not so much an architect as one who had architecture thrust upon him, somewhat to his consternation); and also those painters, such as Canaletto, Guardi, David Roberts, and others, who made architecture the special subject of their paintings. What he is dealing with is the architecture introduced into their pictures by those who were primarily figure-painters. How much there is that is curious and interesting in this respect, in the works of the earlier Renaissance painters, needs only a stroll round the Italian room of the National Gallery to remind one. It is with this school of painting that the present article deals. When the author comes to modern pictures there may be a good deal of room for criticism; architecture is very weakly treated in some of these, though much more realistic. The architecture of the early Renaissance painters, it must be admitted, is often very naïve, sometimes hardly structurally possible; on the other hand, it shows a great deal of fancy and invention. Crivelli's "Annunciation," to which a full-page plate is devoted, is really a most remarkable architectural study, for a painter who professed to treat the figures as the principal *motif* of his pictures. Mr. Herbert A. Bone contributes a short article on "Arras Tapestry," describing its prevalent character and the method of construction. He says well, in regard to the effect of this kind of ancient tapestry, that one should see the work in dim light in a large hall, with a background of armour and dark oak, and broken by long folds—"Strained and displayed at large, they lose much of their mystery," which it is suggested was really intended. We rather doubt such an intention in the minds of the makers; it is a modern idea, but there is no doubt that the real effect of work of this kind is enhanced by its being only partially shown, as the chances of the hanging may determine. Its effect in this sense has prompted two fine passages in English literature—the chapter in "The Antiquary" describing Lovell's dream (or nightmare) in the tapestried bedroom at Monkbarns, and a long and elaborate piece of word-painting in Matthew Arnold's fine poem "Tristram and Iseult."

To the *Burlington Magazine* Mr. C. Ricketts contributes a short critical article on Dalou, which commences by referring to a period when French art was said to be entirely in a state of decadence, and only saved by two artists, Bastien Lepage and Dalou. "Time and fashion," we are told, "have dealt very roughly with Lepage"; he has in fact been torn down from his temporary pedestal. It is curious that the advanced school of critics can see and note a reversal of opinion of that kind in a past decade, apparently without any suspicion that their own exaggerated admiration of special idols in art will probably suffer the same reversal in a few years. Mr. Ricketts then proceeds to let down Dalou to his proper place. There is truth in the criticism as to some of Dalou's limitations, but not, we think, in the accusation against him of want of sincerity. His real shortcoming was a lack of elevation of style, which is the defect in his great group of the "Triumph of the Republic" in the Place de la Nation, vigorous and energetic as it is. Hence Dalou's most complete successes were in realistic rather than in ideal subjects in sculpture. Mr. Clough's article on "Some Florentine Woodcuts" introduces us to some very interesting examples of early Renaissance wood-cuts, in the naïve thick-lined style afterwards to be used with more refinement by Blake and Bewick; these are surrounded each with a simple decorative border formed by a repeated figure, white on black—a simple leaf shape cut out of the surface of the block. The cuts are most interesting historically, but their beauty is certainly exaggerated by the writer of the article. In Mr. Clouston's article of this month on "Minor English Furniture Makers" we come upon Angelica Kauffman, not indeed as a furniture maker, but as a decorator of furniture, for which Reynolds appears to have got her commissions; there is an illustration given of a chimney piece, formerly in Reynolds's house, decorated by Angelica, her portion of it no doubt being the centre panel, with a figure subject, and the frieze of children at each side.

The *Architectural Record* (New York) contains an illustrated article on "The New State Capitol of Minnesota," at St. Paul, U.S.A.; a fine and dignified classical building with a central dome, but which externally wants something more emphatic and a little more elevated in the end pavilions, to break the rather dead level of the skyline. There appear to be some fine apartments and staircases internally, all however in the beaten track of revived classic. The basement of the rotunda, with its domical ceiling, in a very flat curve, seems to have been suggested by a similar basement room in one of the erections of the Paris 1900 exhibition. Mr. Cass Gilbert is the architect. Messrs. Frost & Granger, whose architectural work is the subject of another article, appear to have done a good deal in railway station work, and done it rather well; their road-side stations do not show very much character, but the large La Salle Street station at Chicago shows very good and suitable treatment for a building of this kind—internally at least; externally it seems to be only the normal high building (with "offices to let" by the Company probably) with a large arched entrance in the ground story; hardly a treatment specially expressive of a railway station. The houses illustrated are not particularly interesting, but the small country town-hall for Lake Forest is an interesting and picturesque building. In an article on "The Life of Architecture"—that is, on the element of individuality which gives life to a building, there is an interesting example of

a country club-house which has been built across a small ravine, an arch spanning the ravine carrying a kind of gallery which connects the two main blocks of the club-house. This is a good example of turning to account an accident of site to produce a special bit of architectural picturesque. What strikes one, however, is that all the buildings illustrating this article on "The Life of Architecture" are by Messrs. Pond & Pond, and that the article is signed "Irving K. Pond." If this is one of the members of the firm, a rather obvious comment is suggested.

The *Architektonische Rundschau* contains an article by Herr Gotthard Müller on the apse of the Neuwerker Klosterkirche at Goslar, a very curious bit of richly decorated Romanesque work, with two orders of exterior wall shafts with elaborately carved capitals of transitional foliage. The most singular detail, however, is to be found in the corbels interposed between the upper and lower wall shafts, which have a convex profile of a shape often found, but in this case carved with short colonnettes which follow the curve of the corbel. Nothing could well be more ugly or unmeaning, but as an early architectural eccentricity it is worth note.

We give a reproduction of one of the corbels. An article on architectural work in the Berlin Art-Exhibition is illustrated by some interesting and characteristic bits of design—among others a "Helden-grab am Meere," by Herr Hartung, showing a rocky islet built up into a kind of fort-like monument to a hero, with an equestrian statue on what may be called the prow of the island; it is a poetic idea which might quite possibly be carried out as a memorial to a great man: there is something about it curiously reminding one of the ideals of Wagner's operas. The separate plates in this issue are of no particular interest.

The *Berliner Architekturwelt* is also largely occupied with the Berlin Art-Exhibition, and some of the illustrations in the *Rundschau* reappear here. Some of the architectural drawings reproduced are very pleasing, but there is nothing among them to suggest any special comment.

The *Art-Workers Quarterly* contains many illustrations of good work of various kinds, useful as suggestions for artistic craftsmen. The first article is one on "Ancient Bookbindings," by Mr. Ainsworth Mitchell, illustrated by a beautiful reproduction of an Elizabethan binding; and Mr. C. Tichell contributes an article on "The Art of Limoges."

The *Antiquary* contains the first instalment of an exceedingly interesting communication by Mr. L. Maclellan Mann, on "Prehistoric Pile Structures in Pits in South-west Scotland." Attention was first drawn to these by the circumstance of a series of depressions on the surface of a site in Stoneykirk parish, Wigtonshire. One might not have been noticed, but a series of five attracted notice, and they were dug into. The first pit presented, at a depth of 7 ft., a series of much decayed logs of round timber more or less vertically placed; they were found to make an oval enclosure of about 9 ft. by 7 ft. For the more detailed description of this and the other excavations we must refer the reader to the article. A noticeable point is that the timber had all been put in upside down, so to speak; that is to say, in the inverse direction of its natural growth. There seems very little reason in the idea of an earth pit lined with logs at the lower part only. Are we to suppose that the ground level had gradually risen? Mr. Mann seems to imply that the upper ends of the logs represented their original surface as put down. As far as we can gather from the article, the logs were nowhere more than about 3 ft. in length. As described, the remains seem difficult of explanation.

The only article in the *Quarterly Review* which comes within our class of subject is that on "The National Coal Supply," which is a *résumé* of the three Reports of the Royal Commission on Coal Supply. From the figures and the arguments used it is deduced that at our present annual rate of increase in consumption of coal, there is coal enough in England to last us for a period which may be estimated as between 400 and 600 years, and "after that the deluge," or the end of England's prosperity. A good deal may happen before even the shorter term of four centuries has run out; we know not what new source of heat might be discovered before then; but there is undoubtedly an argument for the exercise of economy in the use of coal in every possible way. The question of the wisdom of exporting our best Welsh coal, which is the very life of the Navy, for use in navies which may be turned against us, comes perhaps a little too near the region of politics to be properly considered in these pages, but it is one that may affect Englishmen of all professions equally. For the special requirements of battle-ships there is apparently no such coal in the world; its quantity is limited; to go on selling it to powers which may use it against us does seem rather suicidal.

The *Nineteenth Century* contains a short but most admirable critical article by Mr. Wedmore under the title, "Some French and English Painting." In the midst of the shallow depreciation of everything by the now popular school of art-critics, it is refreshing to come on an article commencing with the words—"After I had seen the Royal Academy this year with the usual interest, I saw the Salon with the usual delight." If one believed the so-called "art-critics" who write in some of our daily and weekly papers, the annual exhibitions at the Academy and the Salon are only to be regarded with contempt. The point of Mr. Wedmore's article is to answer the question, why the Academy exhibition excites his "interest" only, while the Salon gives "delight." One reason he gives is the greater freedom and range in subject and treatment seen in the Salon exhibition as compared with the Academy; the latter gives the impression of being more restricted in its sympathies. Then there is the presence of large decorative works, for which the English artist hardly ever gets a chance; and there is the greater sympathy shown at the Salon for originality of style and invention in new paths. At the Academy the *juste milieu* must always be maintained; too much originality is against a man's chances of acceptance. Mr. Wedmore gives a glance in passing at the absurd exaggerations of English critics in the worship of special favourites suddenly taken up as a fashion. "In France," he says, "Rodin was neglected; in France he has been reasonably appreciated; only in England did it occur to hot-headed sectaries and befuddled partisans that sculpture had not existed till Rodin came." That is what might be called a "useful truth"—not for the critics against whom it is directed, who are case-hardened in their self-confidence and irrationality, but it may be useful to some of the public who are liable to be taken in by positive assertions expressed in exaggerated language. By the way, Mr. Wedmore is not quite correct in saying that Puvis de Chavannes "would never do ceilings at all"; he probably disapproved of them, but he painted one large and important one, which was exhibited at the New Salon shortly before his death; and which, it may be added, justified the painter in his usual neglect of ceiling painting, as it was certainly (in that light) not a success, and was in fact merely a wall-painting turned horizontally.

The *English Illustrated Magazine* contains an article by Mr. J. Tavenor-Perry on "An Ancient Port of London." This is a historical sketch of Brentford, a town which, as the author remarks, has had a very bad reputation among the poets—he thinks an undeserved one—for being especially dirty. It is suggested that some part of this "bad eminence" may have arisen from mud left by the river in times of flood or very high tide. It appears that the town is divided roughly into two portions, called respectively "Old Brentford" and "New Brentford," of which the latter is the older and the former the more modern; just as the "New Castle on Tyne" is the oldest thing there, and the "Pont Neuf" the oldest bridge in Paris. Old Brentford was probably the original village when New Brentford came into existence, and retains its local name though it has been obliterated by more modern building. The change came when the Grand Junction Canal was formed about the beginning of the last century, and brought down the coal and manufactures of the Midlands, and Old Brentford became a place of wharfs and a kind of small port for London. Mr. Tavenor-Perry's illustrations are very picturesque, and are excellent specimens of line-work in black and white.

LETTER FROM PARIS.

By an agreement between the Government and the Municipality, which will no doubt be ratified by Parliament, the Colonial Office, which has for so long occupied the Pavillon de Flore of the Louvre, will now take up its quarters in the large building formerly occupied by the Institut des Frères de la Doctrine Chretienne, Rue Oudinot, which was the property of the Municipality. The latter will receive in exchange the proprietorship of the Caserne Napoléon behind the Hôtel de Ville, where various departments of the Municipal service, now very much restricted for space (the Caisse Municipal especially), will find room. This alteration will leave room for the formation, in the Hôtel de Ville, of a new Council chamber in theatre form and surrounded by public galleries. Owing to the increasing importance of the Council proceedings, which are open to the public, as well as to numerous press representatives, this provision of a larger and more commodious chamber (modelled on the plan of the Chambre des Deputés) has become an absolute necessity. This arrangement will necessitate a complete alteration, architecturally, of the part of the Hôtel de Ville bordering on the Rue de Rivoli, both in its external aspect and its interior plan. The cost of this work, it may be added, will be almost entirely covered by the sale to the State of land belonging to the Municipality.

The immense painting by M. Detaille, "Vers la Gloire," which figured in this year's Salon, has now been fixed up in its place in the Panthéon, where its general tone harmonises very well with the interior of the building. M. Detaille himself directed the fixing of the painting in the position for which it was intended.

After having exercised an unusually strict criticism in regard to the paintings submitted for the Prix de Rome, which it has refused to award this year, the Académie has shown itself more lenient in regard to the section of sculpture, and has awarded the prize to M. Lucien Brasseur, a pupil of Barrias and of M. Coutan, who had already obtained, in 1902, the Second Grand Prix. The "Second" this year has gone to M. Lorieux, who obtained some years ago a scholarship. The subject of the Sculpture competition was, as usual, of the most classic order—"Ceres giving instruction in Agriculture." The students in the Section of Architecture, whose drawings have already been exhibited, had

to treat, or to imagine, "Un Château d'Eau destiné à la distribution d'une Eau abondante dans une Grande Capitale." The author of the subject, in itself simple enough, thought it necessary to complicate it by adding in the programme, "des fêtes foraines viendraient, à certaines époques de l'année, s'installer dans la promenade, et borderaient les routes avoisinantes": an unfortunate puzzle to set the young architects, who thus had not only to design a classic structure but to make a kind of *genre* picture quite outside the line of their proper studies—to combine, in short, the monumental aspect of the fountains of Versailles with reminiscences of the fairs of St. Cloud and Montmartre. It is perhaps unnecessary to add that none of them have been able to accomplish this *tour de force*. We may mention as among the best the design of M. Bounet, who has endeavoured to reproduce the style of the garden art of the XVIIth century in France. The prize, however, has been awarded to M. Camille Lefèvre, a pupil of M. Laloux. The general result of an attempt to follow out the programme has been to produce a grotesque combination of a palatial "Château d'Eau" with the inferior and commonplace constructions which generally characterise "fêtes foraines."

The "Société Nationale des Beaux-Arts" (New Salon), now under the presidency of M. Roll, has decided that Music is an art on the same lines as Painting, Sculpture, and Architecture, and equally worthy of public manifestation. Accordingly, the programme of its future exhibitions will include two musical performances weekly, by an orchestra presided over by M. Paul Vicardot, a well-known violinist, in which composers of the new school will have the opportunity of bringing before the public their unpublished compositions, which will be examined and accepted or rejected by a jury, as in the case of painting and sculpture.

In spite of the objections raised by the Paris Municipality to the erection of the monument to Daudet in the Champs Elysées, there is talk of erecting a second monument there, to Philippe Lebon, one of the early promoters of the use of gas for lighting, and who fell a victim to a treacherous attack made on him in Champs Elysées. The sculptor of the proposed work is M. Péchiné.

M. Vernon, the medallist, has been commissioned to prepare the model for a new medal to be worn by members of Parliament, bearing on the obverse a head of the Republic, and on the reverse a female figure symbolising "La Patrie," who hands the French flag to another figure symbolising the Chamber of Deputies.

The Gobelins manufactory have in hand a tapestry intended for the decoration of the Senate House, after a cartoon by M. Albert Maignan, representing "Venus deploring the loss of Adonis." The Luxembourg museum will shortly receive from the same manufactory another tapestry, representing "Jupiter and Semele"; and the Gobelins is also at work on five tapestry panels intended for the main corridor of the Senate House, representing subjects from Ovid's Metamorphoses.

The stream of the Dhuys is to be arched over where it passes through the Communes of Montreuil, Bagnolet, and Romainville. The cost is estimated at about 280,000 francs.

The Palace of Fontainebleau is reported to be in a much worse structural condition than was supposed. Parliament had voted 50,000 francs for repairs to the building, but it is now estimated that the necessary work cannot be carried out for less than eight or nine times that amount.

The Académie des Beaux-Arts has to consider the election of a successor to the late M. Henner, and it is said that they intend to select M. Ziem, now 84 years of age, and whose principal works, presented by the artist to the City of Paris, are to be seen in a room of the Petit Palais. Another matter which is much discussed at the Académie is their possible part in the disposal of Henner's property. His will has not yet been opened; but as he had no legal heirs, and his liberality in assisting young artists was notorious, it is thought probable that he will have left some important legacy to the Académie for the founding of scholarships or funds of some kind for the assistance of struggling artists: so that the formal opening of the "testament" is looked forward to with considerable interest.

THE ARCHITECTURAL ASSOCIATION EXCURSION.

THE Architectural Association made Lisieux, in Normandy, their headquarters this year, with the object of visiting the châteaux and manoirs that abound in the neighbourhood. These are not nearly so well known to architects as the châteaux on the Loire, and, although smaller, are hardly less interesting in many ways. Permission to visit them is difficult to get, and the guide books hardly mention them, therefore the thanks of all the members of the Architectural Association who took part in the tour, are due to those who so carefully and skilfully arranged it from the departure from Waterloo on Saturday evening, July 22, until the return home on the following Saturday. On the way cut the majority took the Southampton-Havre route, though a few went viâ Newhaven and Dieppe, passing through Rouen and Caudebec—probably the more interesting and quicker way of the two.

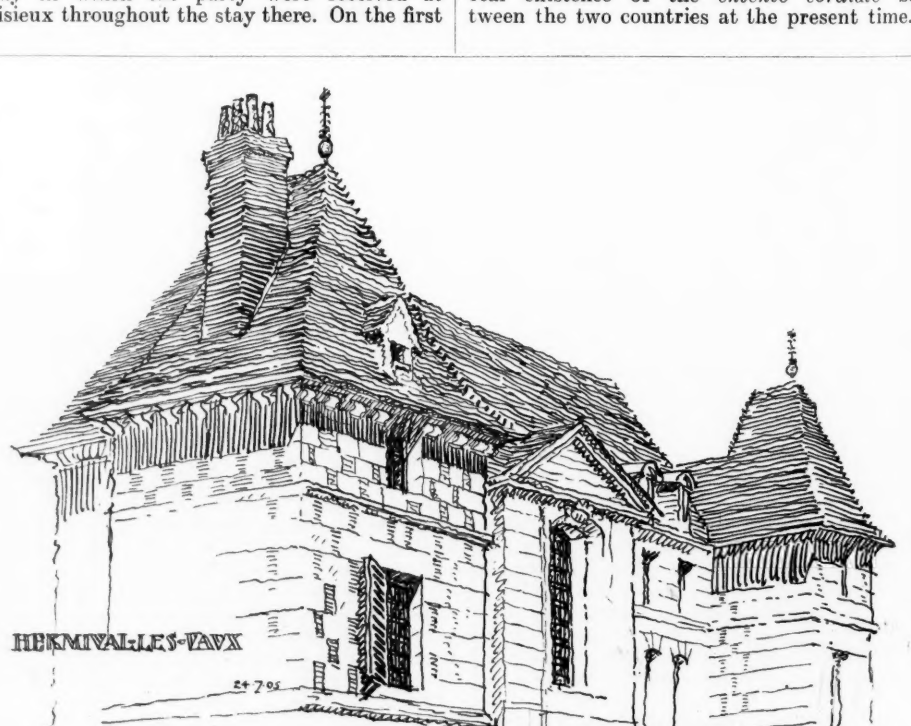
It is unnecessary to say much of Havre and Honfleur, as both are well known to frequenters of the Continent. It is sufficient to notice at the latter place, a fishing village of considerable character, the remarkable timber church of St. Catherine, in the market-place, with its curious tower standing quite apart. The church itself contains two parallel XVth century naves, with two aisles added in the beginning of the XVIth century, and is built entirely of timber with the exception of a cement portico added later still, and quite out of keeping with the rest. The choir has, unfortunately, been rebuilt in modern times with no sympathetic touch. The museum should also be visited, containing, as it does, examples of Normandy costumes of different periods of her history arranged in the rooms in chronological order, and in some cases displayed on wax models of peasants in characteristic attitudes and surrounded by the furniture, etc., of the time.

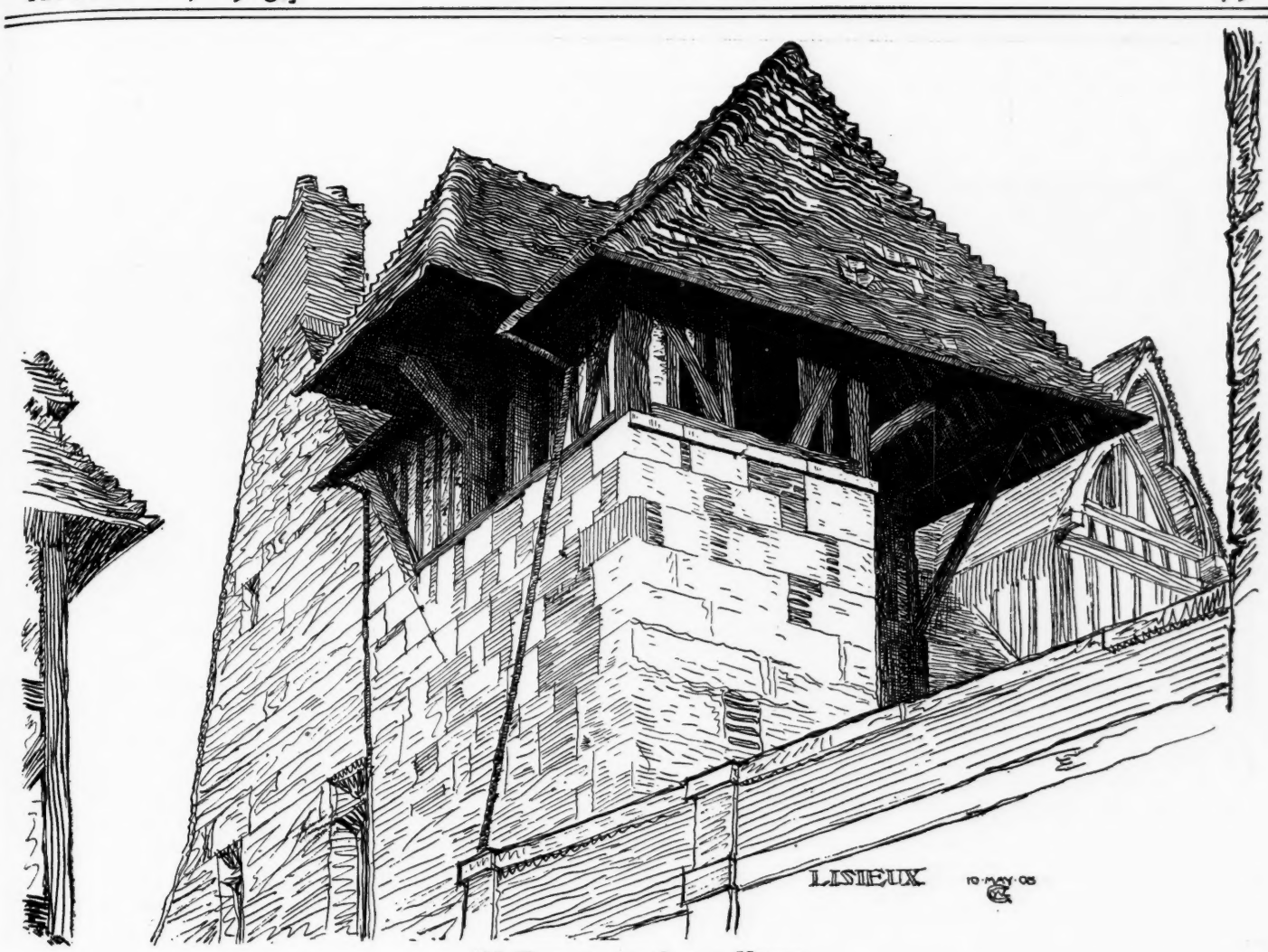
The journey from Honfleur to Lisieux gave one the impression of a rich and prosperous country of continuous pasture land, dotted here and there with flourishing villages connected by long straight roads and avenues of tall poplars. Indeed, everyone was much struck throughout the tour with the prosperous appearance of the homes of the peasants and the contrast to this afforded by the deserted condition of the châteaux and manoirs, which, even when occupied, are in the majority of cases surrounded by only the remnants of the magnificent gardens they once possessed. This cannot be entirely accounted for by the fact that labour in the country is extremely difficult to obtain owing to the prosperity of the peasants.

Another very striking fact was the cordial way in which the party were received at Lisieux throughout the stay there. On the first evening M. Campserveux, the architect to the town, paid them a visit, offering to take them over his new hospital and show them everything of interest in Lisieux. On the Monday the Mayor and Corporation entertained the party to tea at the Hôtel de Ville, and in a short English speech afterwards expressed the extreme pleasure that he and his fellow-townsmen felt in welcoming artists to their beautiful town, but that when the artists were also Englishmen they were to them twice friends. On the Friday night the members returned this hospitality at the Hôtel de France, the headquarters, and a most enjoyable evening was spent. Mr. Dawber, in proposing the health of the guests (in French),

Garden Houses, Fumichon.

thanked the Mayor most heartily for the help he had given in supplying information concerning the different places visited, without which the tour would have been impossible to arrange, and assured him that the kindness they had received throughout the week would never be forgotten by the members of the Architectural Association. In replying, the Mayor assured them that the pleasure was on his side, and that he hoped they would all come again and frequently to fraternise with the people of Lisieux. Several more speeches were made, in all of which were references to the very real existence of the *entente cordiale* between the two countries at the present time.





Old House, now used as a Museum.

Before giving a detailed description of each building visited during the week, a general description of the type of château visited may not be out of place, especially as they are all built on similar lines and with very similar architectural treatment. Like the châteaux on the Loire, they were originally built as fortified moated castles, and many still show evidences of the drawbridges to-day. In later times they were converted into ordinary country houses by enlarging the windows from mere slits to more reasonable proportions, abolishing the drawbridge, and in some cases the moat, and laying out the grounds with terraces, orchards, formal gardens, etc. The date usually assigned to these châteaux is late XVIth and early XVIIth centuries.

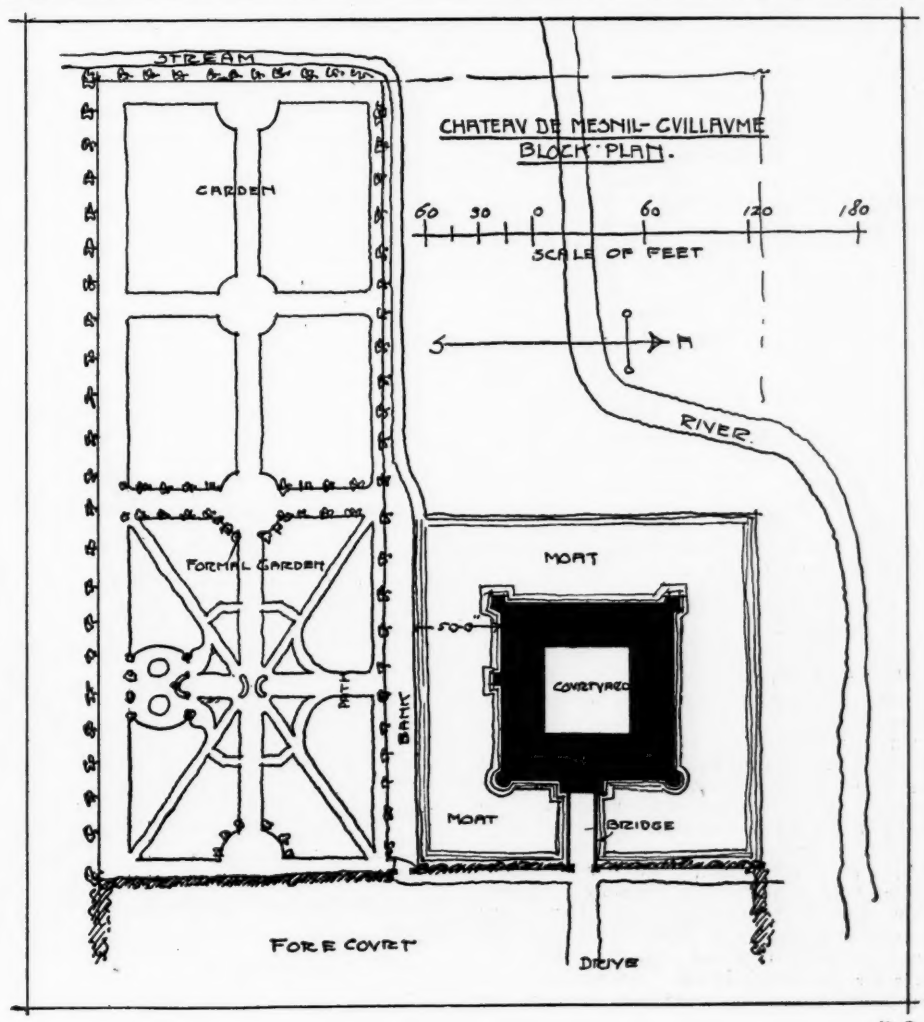
As we see them to-day, the site is usually a square or parallelogram, with the house itself in the corner and the rest of the ground divided into three equal divisions for the gardens. We find invariably a pigeon-house somewhere, as the owners evidently made good use of the permission, only granted to nobles before the Revolution, to keep pigeons.

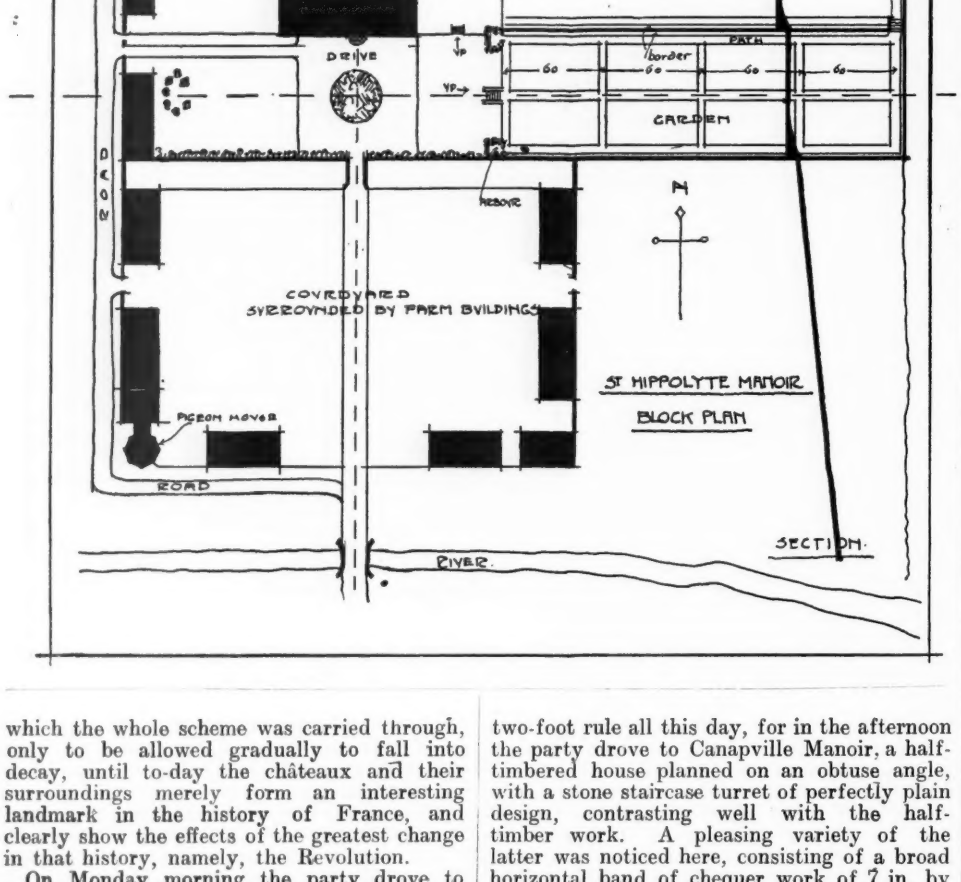
The plan of the house itself usually takes the form of a courtyard, with one, two, three, or four sides built upon, surrounded by the moat and rising directly out of it. At every exterior angle is placed a turret, which gives a picturesqueness not to be suspected from the severe and symmetrical planning of the whole. The rooms usually lead out of each other—an arrangement ill adapted to modern requirements, but allowing fine vistas from end to end of the building.

The exterior treatment is usually simple, aided very materially by the reflections in the surrounding water, and consisting mainly of a mixture of brick and stone arranged in regular patterns over the whole, and of corbel cornices cut right through to allow of the large windows or dormers that have been inserted at later times; but perhaps the most effective and interesting feature in the exterior is the slating: no curves or combination of curves seemed impossible to their builders, though perhaps a little leakage in those days did not matter.

The interiors are not very interesting save for specimens of Normandy ironwork, finger-plates, door-handles, etc., of which every house is full.

The gardens were evidently once very fine, though during the whole week the party did not see one kept up in its ancient form; in places the traces were discoverable, and enabled one to realise the completeness with





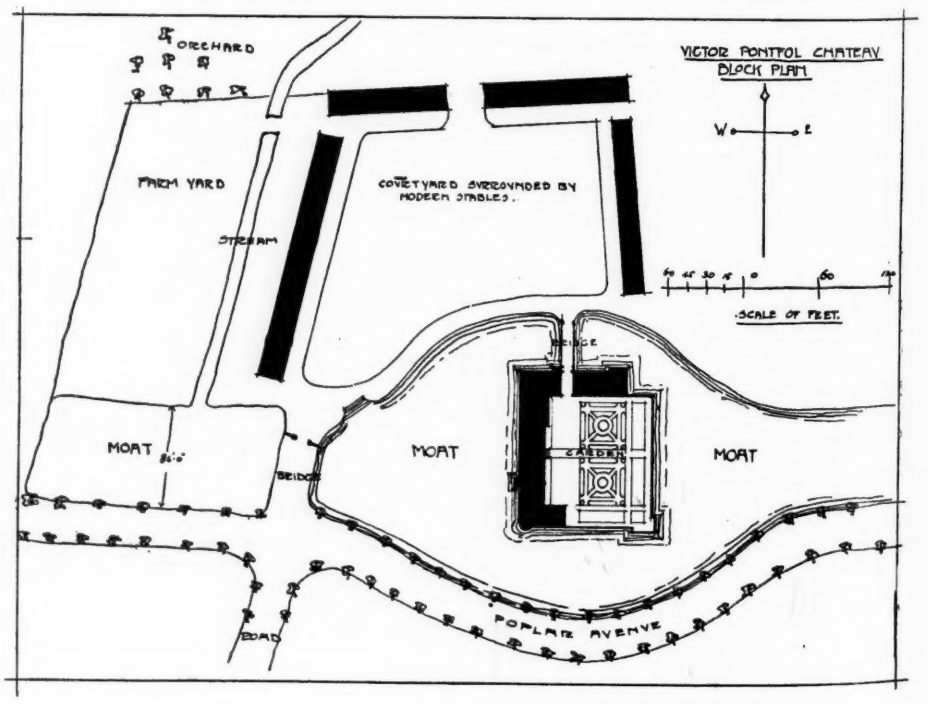
which the whole scheme was carried through, only to be allowed gradually to fall into decay, until to-day the châteaux and their surroundings merely form an interesting landmark in the history of France, and clearly show the effects of the greatest change in that history, namely, the Revolution.

On Monday morning the party drove to Hermival Château, which, though a small one, is typical of all the rest in its exterior treatment of brick and stone and clever roofing of its flanking turrets. At Ouilly du Houlay a long stay was made, and without doubt this is the most picturesque of the series and one of the largest, owing to the numerous alterations and additions to the original building. Approached by a tower and drawbridge, the house itself surrounds a small courtyard with a turret in one of the internal angles; on the south side runs a long terrace overlooking the position of the moat, now a large field, from the bottom of which Mr. Green's sketch in our last issue was taken. The interior is interesting for some nice panelling of a late date, including one bedroom with fittings complete. Another drive through long, straight poplar-lined roads and the party reached Fumichon Château, which, while obviously designed by the same hand as the other two, is planned on different lines, having two delightful turreted pavilions on each side of the entrance to the forecourt. The house itself fills the whole length of the side opposite the entrance, with the front elevations of the pavilions repeated (without a break in plan) at the ends; at least, that was the original scheme, but, unfortunately, a wing has been added connecting up one of the pavilions to the main building, thus destroying the symmetry of the whole. Probably the château never had a moat, which may account for the difference in arrangement.

On Tuesday, after an early start, the excursionists spent the morning at Pont l'Evêque, a small town famous for its cheese, situated about ten miles to the north of Lisieux, containing many half-timbered houses and a late church with an unfinished, heavily-buttressed tower, with a temporary slate roof of possibly greater picturesqueness than any permanent finish would have. In guide-book language Pont l'Evêque "teems with subjects for the artist's brush," and certainly the brush was more in evidence than the pencil or two-foot rule all this day, for in the afternoon the party drove to Canapville Manoir, a half-timbered house planned on an obtuse angle, with a stone staircase turret of perfectly plain design, contrasting well with the half-timber work. A pleasing variety of the latter was noticed here, consisting of a broad horizontal band of chequer work of 7 in. by 3¾ in. bricks and stones of similar size alternating, with a moulded timber string-course over, and above this more half-timber work, with the same pattern used as the infilling up to the window-sill level. The next objective was the St. André d'Herbelot Château, and *en route* the only hitch of the tour occurred. After a very long drive in the broiling sun, ending with what seemed an equally long walk uphill, the party found themselves in the grounds of a pretentious modern house. The drivers came in for a considerable quantity of abuse in English, which, perhaps fortunately, they could not wholly understand, though it had the effect of getting the visitors to the château in time to have a hasty walk round before the train returned to Lisieux from the local station. St. André d'Herbelot is entirely built in stone with the exception of one modern stucco turret, and, although only one wing now remains, it was evidently originally very large and more severe in detail than the others. The village contains a picturesque church.

On Wednesday the excursionists had the first real opportunity of seeing Lisieux itself, a town with a long and varied history behind it, once the home of the Lexovii, a tribe several times mentioned by Cæsar. In the IVth century it was destroyed, but by the VIth century it had grown up again, and we hear of it as a prosperous town and the seat of a bishopric. In 1135 Geoffrey Plantaganet laid siege to it, reducing its citizens to great straits, and they finally burnt down the city and cathedral. When peace was restored the present Church of St. Pierre was commenced, and, although since the end of the last century it has ceased to be a cathedral, it has the distinction of being one of the earliest and most complete Gothic churches in France. The nave, transepts, and part of the choir were built before 1180, and show clear evidences of classic traditions in the acanthus-leaved caps of the piers of nave arcade. The clearstory was added in the beginning of the next century. Thus we have an interior practically of one date unspoilt by restoration and unaffected by decay. Of the west front we cannot say as much. The northern tower part of the original scheme has never been completed, while the southern one was altered and finished in the XVIIth century; the long lancet windows have been divided and a spire added. The main west entrance and window over have also been altered. Close by is the Church of St. Jacques, built in the early part of the XVIIth century. Its vaulted nave and aisles are excellent examples of the later French methods employed in this form of construction. The peculiarity is that the floor of the church follows the natural slope of the ground. After inspecting these churches M. Campserveux very kindly took the party round the rest of the town, showing the best of the old timber houses that now remain, and explaining that these are now safe from mutilation, owing to a society for the preservation of ancient buildings which he has helped to found—an example that might well be followed in many towns in England before the ravages of the jerry-builder have finally destroyed the need for such a society.

In the afternoon Count de la Place, who owns the Château St. Pierre de Mailloc, about five miles to the south-east of Lisieux, was most kind in showing the former and his most magnificent collection of scientific books. Afterwards, the party drove to the

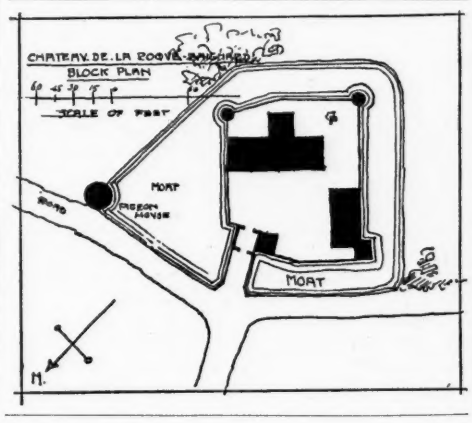


Mesnil-Guillaume Château, of which we give a plan roughly drawn to scale: an uninhabited brick-and-stone building, mellowed with age, surrounding a courtyard with angle turrets at each external angle, two of which are a curious lozenge shape, rising directly out of the moat and reflected in it, on one side a garden overgrown with weeds, on all other sides green pasture land, watered by little streams, which catch the last rays of the setting sun, making a picture of melancholy beauty which must be seen to be appreciated—and seen, will not be forgotten.

On Thursday morning De Fougy Farmhouse was the first stop of the day, after which the visitors made a long stay at St. Hippolyte Manoir, a complete house and farm situated in a hollow, out of which it seems to grow as naturally as the neighbouring trees. Level terraces and gardens surround the house itself, while the farm buildings form an entrance forecourt on the sloping ground below. These are all half timbered, and, while laid out on symmetrical lines, sacrifice none of the picturesqueness of a more haphazard method. The house is built in stone, with square-headed late Gothic windows, now minus, unfortunately, the mullions, and two half-timbered dormers, a sketch of one of which appeared in our last issue.

Fervacques Château was the next visit, owned by the Countess de Montgomery, who possesses a magnificent collection of furniture, tapestry, and Normandy earthenware and china. The château was partially built in the XVth century and partly in the XVIIth, and it was noticed in the later portion, that the heavy cornices were not broken at the dormers, as is usually the case, and that the corbels in some instances were strengthened at these points to carry them—a distinct improvement in the appearance of the elevations. After tea here the party drove to the Château de St. Germain de Livet, remarkable for the use of green glazed bricks and a few green glazed tiles sparingly used in the roofs, also for the fact that it has a picturesque entrance flanked by two small circular turrets at the angle formed by the two wings of the building, one of which has been rebuilt.

On Friday morning, Crevecœur Manoir was locked up when the visitors arrived, and, unfortunately, remained so until they left in half an hour. The Hotôt Farm, reached after a long drive, proved to be a group of farm buildings hardly worth going so far to see had it not been that Victor Pontfol Château is close at hand, where a stay was made of about two hours. La Roque Baignard was the next and last



visit of the tour. Only one portion of the original building, together with the entrance tower and two small angle turrets, which denote the position of the original house, remain, the rest having been burnt down at the Revolution. The drive back to Lisieux was a long one, and ended with the dinner to the Mayor and Corporation before mentioned, and the usual sing-song afterwards.

Saturday is market-day in Lisieux, and the town appeared in a new light. The market-place was filled with people from early hours in the morning and gay with the bright colours of the flowers, fruit, and other merchandise for sale on the different stalls. The two towers of St. Pierre in the background seem to consecrate with their presence a scene they have witnessed every Saturday morning for nearly eight hundred years. As the visitors sat at the tables of the cafés surrounding the market-place and watched the animated faces of the crowd, they enjoyed a quiet morning, tempered by the regret that it might be a long time before many of them would be able to return to enjoy again the kindness and hospitality of the people of Lisieux.

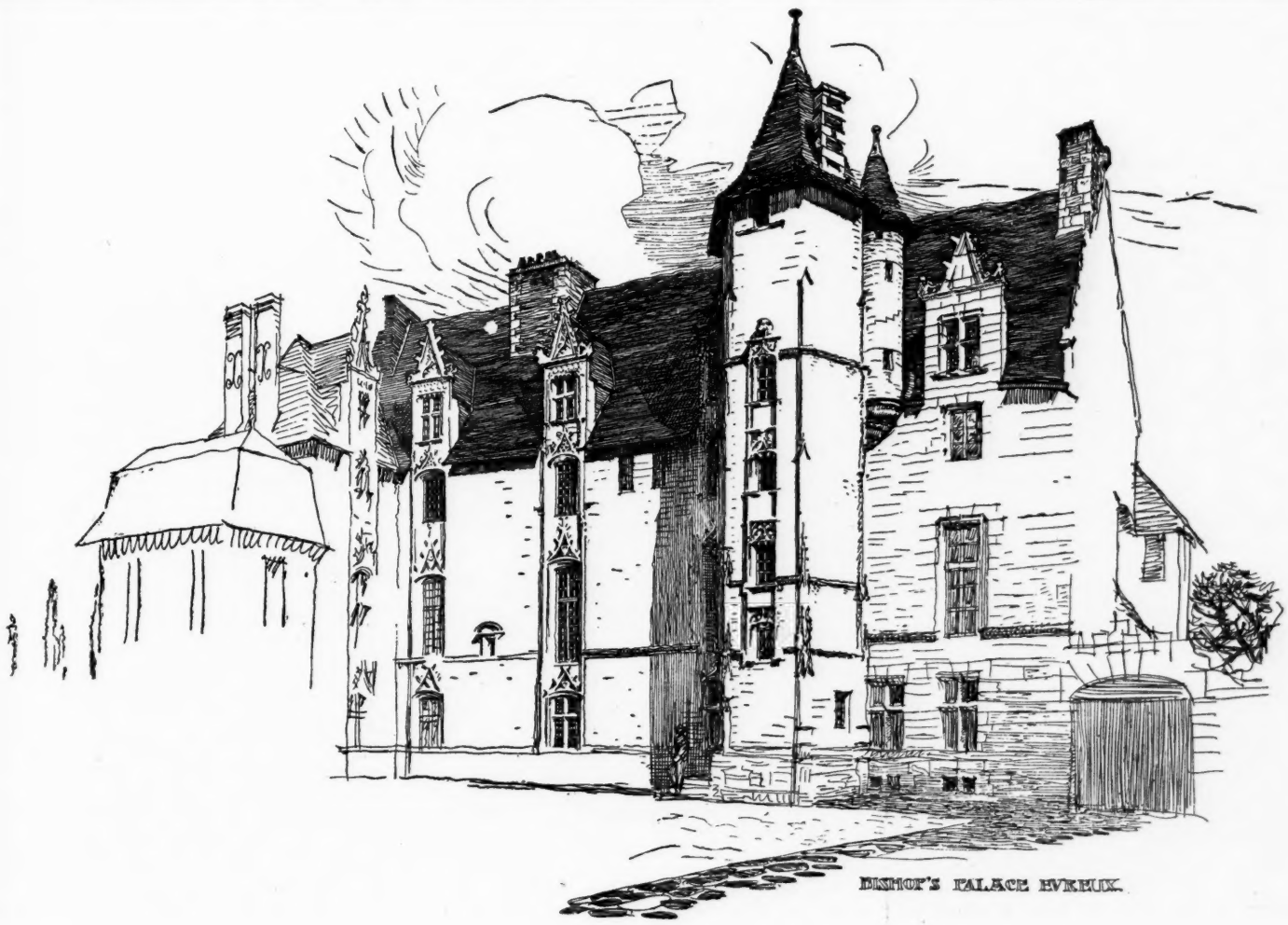
THE ROYAL ARCHÆOLOGICAL INSTITUTE AT TUNBRIDGE WELLS.*

On Saturday, the 29th ult., the party again went by special train to Maidstone, and devoted the morning to an inspection of the chief ancient buildings in that town. The fine parish church of All Saints, where the members were received by the vicar, the Rev. E. H. Hardcastle, was the first objective. Its architectural history was explained by Mr. Hope to date from its conversion into a collegiate church by Archbishop Courtenay in 1395, when it was begun to be rebuilt; but, as that prelate died the following year, he could not have done much, and the greater part was probably the work of his executors, to whom he devised the residue of his estate, to be expended "circa construccionem ecclesie collegiate de Maydeston." The whole of the existing church is of one design, and consists of a chancel with clearstory and aisles of three bays, with a southern vestry, a nave with clearstory and aisles of six bays, and a south porch, which is also carried up as the tower. The south aisle of the chancel and the porch were both intended to be vaulted in stone. The eastern part, at any rate, of the church was finished by 1417, for it contains the tomb, set up in his lifetime, of John Wotton, the first master of the college, who died in that year. None of the ancient fittings remains, except the canons' stalls in the chancel and a length of screen-work north of the altar. Part of the pavement of an older church and the plinths of its piers were found during a restoration. At the request of Sir Henry Howorth, the vicar added a few remarks, and quoted the opinion of the late Rev. J. Cave-Brown, that one of the windows in the north aisle of the chancel had evidently belonged to the earlier church. Mr. Hope pointed out that the window in question was actually of later date than the present building, an opinion which was confirmed by other architectural experts.

A visit was next paid to the remains of the college on the north of the church, but of this very little is left beyond the fine entrance gateway of Courtenay or his executors, and the main ranges of buildings had apparently never been completed.

From the college the party went to the

* Continued from page 150.



BISHOP'S PALACE EVREUX.

ancient stables of the archbishop's palace, a two-storied structure, probably *temp.* Archbishop Morton, with an extremely picturesque external staircase to the upper floor. The palace or manor house itself is externally for the most part of the XVIIth century, but probably incorporates the great hall begun by Archbishop Ufford in 1348. At the south end are some interesting traces of alterations by Archbishop Morton and his immediate predecessors.

Before luncheon a short visit was paid to the museum, which is noteworthy, not only for its fine collection of Kentish antiquities, but for the ancient Jacobean mansion in which they are housed.

After luncheon carriages were in readiness to convey the party to West Malling.

Here a halt was made first at the Abbey, which Mr. Hope explained was founded at the close of the XIth century by Bishop Gundulf for Benedictine nuns. The church has for the most part perished, but the south transept remains, as well as the south wall and west front of the aisleless nave. The front exhibits some interesting later Norman changes, the work of the same builders as the front of Rochester, and now forms the west side of a large tower, square below and octagonal above, which was built in the XIVth century. Mr. Hope called special attention to the remaining south alley of the cloister, which originally consisted of a series of trefoiled arches carried by slender triple shafts, and richly decorated within. The date is probably about 1230-40. In the XVth century an upper story was added, when various structural alterations were made to enable the arcades to carry the increased weight. Of the other buildings, a half-timbered guesthouse of the XVth century and the gatehouse block of the same date, with a XIVth century chapel attached, are all that are left. The Abbey has in recent years again become the home of an Anglican convent of Benedictine nuns.

Some interesting comparative remarks were added by the Rev. G. M. Livett on the peculiar features of Bishop Gundulf's work in the Malling and Rochester districts, particularly in his use of tufa for quoins and facings.

On the way up to the parish church a number of the party examined a small house, apparently of the XIIth century, in rear of a shop in the High-street. It is a two-storied building, with a XIIIth century doorway on the ground floor, and in the upper chamber two side windows built of Norman masonry, with zig-zag mouldings round the heads.

The parish church of St. Mary was described by the vicar, the Rev. A. W. Lawson, who called attention to the early Norman chancel and its XIIIth century extension, and to the tower, which was also early Norman. The old nave partly fell down in 1778, and was replaced by a plain barn-like room, which has lately given way to a new nave and aisles, the work of Mr. J. T. Micklethwaite. The cost of the fittings had been largely defrayed through the sale of the now famous Elizabethan beer jug at Christie's on February 19, 1903, for the huge sum of 1,450 guineas. This fact has been commemorated at Malling by the setting up of a representation of the jug in the church porch, with the inscription :—"Thanks be to God. 1903. This Porch and Pews of this Church were Made by the Sale of a Jug having Silver Mountings with the London Hall-Mark for 1581." The Rev. G. M. Livett also added some remarks on the early Norman work.

A move was next made to St. Leonard's Tower, which, despite its castellated appearance, Mr. Livett showed was the tower of a destroyed church of St. Leonard given to Malling Abbey by Bishop Gundulf, whose peculiar style of building it well exemplified. Some remains of the ruined church were also pointed out. The journey was afterwards resumed to Wateringbury station, *en route* for Tunbridge Wells.

Monday, July 31, was devoted to visits to Penshurst and Tonbridge. The party left Tunbridge Wells in carriages shortly after ten, and drove direct to Penshurst, where the church was first inspected. A visit was next made to Penshurst Place, where the members of the Institute were received by Lord and Lady de l'Isle and Dudley, who themselves conducted them over the armoury and private apartments. After an inspection of the other portions of the building and of the beautiful gardens, the party reassembled in the great hall, where Mr. Hope gave a brief description of the architectural history of this famous mansion. An older house on the site was, he explained, rebuilt by Sir John Pulteney, who obtained licence to crenellate or fortify it in 1341, but died in 1349. His splendid hall, with the solar or great chamber (and probably the chapel) over a vaulted basement at one end, and the buttery and pantry (also with lodgings over), with the way to the now destroyed semi-detached kitchen at the other end, form the nucleus of the present house. A later owner, Sir John Devereux, also had a licence to crenellate in 1393, but he died the following year, and all that remains of his work seems to be the so-called Buckingham building, which exhibits the singular feature of having all the windows built inside out. The mansion was brought to its present form by Sir Henry Sidney during the years that preceded his death in 1586.

After luncheon the journey was continued to Leigh Church, a building chiefly of the XIIIth century, with a modern tower, and thence to Tonbridge. Here a halt was made at the Castle, an interesting example of the mount-and-bailey type, the work of Richard of Clare, *alias* of Tonbridge, *temp.* William I. An ascent was first made to the top of the mount, when Mr. Harold Sands read an interesting paper on the history and arrangements of the Castle, and described the existing remains of the masonry defences. These consist chiefly of the grand XIIIth century gatehouse of the bailey, of the walls of the covered ways that connected it and the great tower on the mount with the other buildings, and of the river wall; but this last is so shrouded in ivy that its features are almost invisible. After a careful inspection of the gatehouse the party returned by train to Tunbridge Wells. In the evening the concluding meeting was held in the Pump Room, when the annual report and balance-sheet were read and the usual votes of thanks passed to all those who had assisted in the carrying out of a most successful meeting. Several places were suggested as the centre of next year's meeting, including Worcester, Colchester, Hull, and Normandy. The first named received the most favour, but the final selection was, as usual, left to the Council.

Tuesday, August 1, the last day of the meeting, was one of the most enjoyable. The party first went by train to Tonbridge, and drove thence to Old Soar, where the owner, Sir William Geary, received the visitors. Mr. Hope explained that what they had come to see was a small but perfect manor-house of the concluding years of the XIIIth century, now forming an appendage to an early Georgian farmhouse. It was two stories in height, and consisted of the hall, which was raised upon a vaulted cellar, with a semi-detached garderobe tower at the north-west angle, and a chapel, also semi-detached, and on a level with the hall, at the north-east angle. On the south-west was a circular stair-turret up to the hall, the outer door of which had been covered by a pentise supported by richly-carved corbels. The hall retains its original king-post roof above an inserted upper floor, but has lost the fireplace and its chimney. It had a large two-light window at each end, now bereft of their tracery. In the chapel is a richly-decorated piscina, but the east window has been destroyed for a modern entrance.

The journey was next continued to Ightham, where the church was inspected under the guidance of Mr. Hope, who pointed out that it had consisted originally of a small square chancel and a nave of early Norman date, to which narrow aisles had been added, and a western tower, apparently about 1420. The interesting south porch was built *temp.* Henry VII., and the north aisle rebuilt in brick in the XVIIth century. Attention was specially called to the remaining ends of the rood beam, to the enclosing screen of the chapel at the end of the south aisle, and to the XVIIth century carved pews of the owners of Ightham Court, with the arms of the James family; also to the tomb and effigy of Sir Thomas Cawne, *circa* 1375, with a singular window over, for the making of which he bequeathed 20*l.*

The rector, the Rev. D. Barry, referred to another memorial in the chancel, that of Dame Dorothy Selby, who died in 1641, and was believed to have been the person who revealed to Lord Monteagle the existence of the Gunpowder Treason and Plot.

After luncheon a visit was made to Ightham Mote, where Mr Henry Taylor described the main features of this fine and well-known perfect courtyard house.

The journey was afterwards resumed to Tonbridge, and so the meeting of 1905 came to an end.

Although no Roman or Saxon remains could be included in the programme, and only one prehistoric monument, Kits Coty House, from the architectural standpoint the Tunbridge Wells meeting was particularly satisfying.

The parish churches included typical Kentish examples at Hawkhurst, Wrotham, Aylesford, West Malling, Penshurst, Leigh, and Ightham, as well as the fine collegiate church of Maidstone and the lovely Sussex church at Etchingham. The religious houses comprised the White Canons' Abbey of Bayham, the Carmelite friary at Aylesford, and the Benedictine nunnery at Malling, to which may be added the remains of the College at Maidstone. The purely domestic work included such famous examples as Knole House, Penshurst Place, and Ightham Mote, the lesser-known buildings at Yaldham and Old Soar, and the archiepiscopal manor house at Maidstone; while the castles were fitly illustrated by such interesting structures as Allington, Bodiham, and Tonbridge. Lastly, mention must be made of the numerous picturesque old cottages to be met with in the villages, especially at Penshurst and Ightham. The beauty of the scenery through which so many of the excursions were made amply justified the claim of the county of Kent to be the Garden of England.

[In the reference last week to Allington Castle the XIIIth century bricks should have been described as purposely made to fit the jambs (not joints).]

FREEMASONS' HALL AND TAVERN.

THE trustees of the United Grand Lodge of England have appointed Mr. Henry L. Florence, the Grand Superintendent of Works to the Lodge, as architect for their new buildings on the site of Nos. 8-14, Wild-court, at the rear of the south side of Great Queen-street, and the reconstruction of the tavern recently vacated upon the expiration of the lease. The former tavern, behind which lay the Craft hall, was rebuilt by William Tyler in 1786. The present tavern, Nos. 61-3, is part of the combined and enlarged premises, having a depth of 200 ft., erected in 1865-6, after F. P. Cockerell's designs, selected in open competition, for which was taken the site in the main street of a row of houses called Queen's-place so as to give the hall a frontage to that thoroughfare (see the illustration, with plan of the principal floor, in the *Builder* of August 18, 1866, and Mr. W. Curtis Green's drawing, March 26, 1898). Mr. W. G. Nicholl executed the statuary and carving. In the chronological account of Soane's career and works compiled by G. Bailey, and printed in our number of Dec. 12, 1846, he states that Soane, who, in 1813, was elected Grand Superintendent of Works, built "the new grand Masonic Hall adjoining Freemasons' Hall in Great Queen-street in 1826." The Society of Free and Accepted Masons resulted from a Grand Lodge formed for England after a meeting held in London in 1717; similar lodges were formed for Scotland in 1736 and for Ireland in 1730. Having raised 5,000*l.* by a tontine, the Grand Lodge for England acquired, in 1774, their property in Great Queen-street, where Thomas Sandby, R.A., built the hall, which was opened on May 23, 1776, Lord Petre being Grand Master. It was the first house erected in this country with appropriate symbols of Masonry and with suitable apartments for the holding of lodges and other ceremonies. Sandby designed all the emblematical ornamentation of the great hall, executed in plaster by Cox. There are drawings to scale of the former buildings in Britton & Pugin's volumes for 1825-8 of public edifices in London. In the "Crowle" Pennant are two

sectional drawings of Sandby's building; the interior of the Masonic Hall is depicted in a print, after T. Stothard, R.A., of the procession of the Freemasons' orphan children. The hall has formed the meeting-place of the Madrigal Society founded in 1741 by John Immyns, the Melodists, and other musical clubs. The Grand Hall or Temple suffered much damage from a fire on the night of Thursday, May 3, 1883, which consumed the roof, organ, furniture, and portraits of Grand Masters; the records and E. M. Baily's marble statue of the Duke of Sussex were saved. Sir Horace Jones, Grand Superintendent of Works, prepared a scheme for general reconstruction, to include a new temple with a capacity of 1,500 persons, by taking in the banquet-hall of the tavern; the proposal for removal to the Victoria-embankment was relinquished as being too costly a measure. The scheme was modified so as to include the purchase of Bacon's Hotel, Nos. 64-5, and its rebuilding as part of the Freemasons' Tavern. In the result the site of Bacon's Hotel was acquired for Mark Masons' Hall (C. H. Driver, architect), which serves for the Grand Lodge of Mark Master Masons, the Royal Order of Scotland, the Order of the Temple, etc. Then, in 1899, was taken the site of Nos. 57-8 on the west side for the wing which comprises the library and museum, secretaries' offices, and rooms for office-bearers. Mr. Florence, the architect, followed the design, carried out by Messrs. W. Cubitt & Co. in red brick and Portland stone, of the Freemasons' Tavern by Professor Cockerell. Thus the present façade of the block to the west of Mark Masons' Hall has a balance and continuity of design, with a dignified example of modern Classic architecture for its central feature.

ST. PATRICK'S DISTRICT CHURCH, PIETERMARITZBURG.

THIS church, to be erected at Pietermaritzburg, Natal, has been designed with special reference to convenience for its being erected in sections, as funds are forthcoming.

The cost of skilled labour precluded any elaboration of detail. A picturesque local shale will be employed for the outer walls, with brick dressings for the doors and windows. The roof will be tiled. The walls inside are to be covered with asbestos plaster, and the flooring is to be wood blocks on concrete, except the chancel, which will be paved.

The architect is Mr. F. Chatterton, of Pretoria.

LONDON BUILDING ACTS AMENDMENT BILL.

THIS Bill, which a few weeks ago was before a Select Committee of the House of Commons, when the evidence given was reported in the *Builder*, came before a House of Lords Committee last Friday, Saturday, and Tuesday, when similar evidence to that given before the Commons Committee was tendered. The Committee found the preamble of the Bill proved on Tuesday, and the same evening the Bill passed third reading in the House of Lords, and now awaits the Royal Assent. The Bill as it has passed is a very different measure from that which was proposed by the London County Council at the beginning of the session, and is confined now to provisions for securing adequate means of escape from fire in existing and new buildings of a certain height and occupied by a certain number of people. The City of London is not excluded from the purview of the Bill, but the Mansion House and other public buildings will remain in the same position as they occupied under the London Building Act of 1894.

A new clause was inserted to the effect that no person shall convert a building without the consent of the County Council in such manner that the building when so converted will not be in conformity with the provisions of the Act.

The Committee decided that Staple Inn should be deemed to be buildings to which the exemption clause should apply, so long as they are used for their present purpose.

Lord Verulem (one of the Committee) remarked that if modern staircases were to be placed either within or externally they might just as well pull down the old Inn.

LIBERAL CLUB, HONLEY, YORKSHIRE.—A new Liberal Club is to be erected in Cuckoo-lane, Honley, from the designs prepared by Mr. J. Berry, architect, Huddersfield.

THE INSTITUTE OF SANITARY ENGINEERS:

VISIT TO SOUTHAMPTON.

THE members of the Institute of Sanitary Engineers paid a visit on Saturday last week to Southampton. Under the guidance of their President (Mr. J. A. Crowther, Borough Engineer to the Southampton Corporation), a visit was paid to the Southampton Docks, the party being conducted over the American Line steamer *New York* and the Union-Castle liner *Saxon*. At one o'clock an adjournment was made for lunch at the South-Western Hotel. The President presided, and there were also present the Mayor (Colonel E. Bance, D.L., J.P.), Mr. W. Matthews (Waterworks Engineer), Dr. Lauder (Medical Officer of Health), Mr. T. Brierly (Borough Analyst), and others.

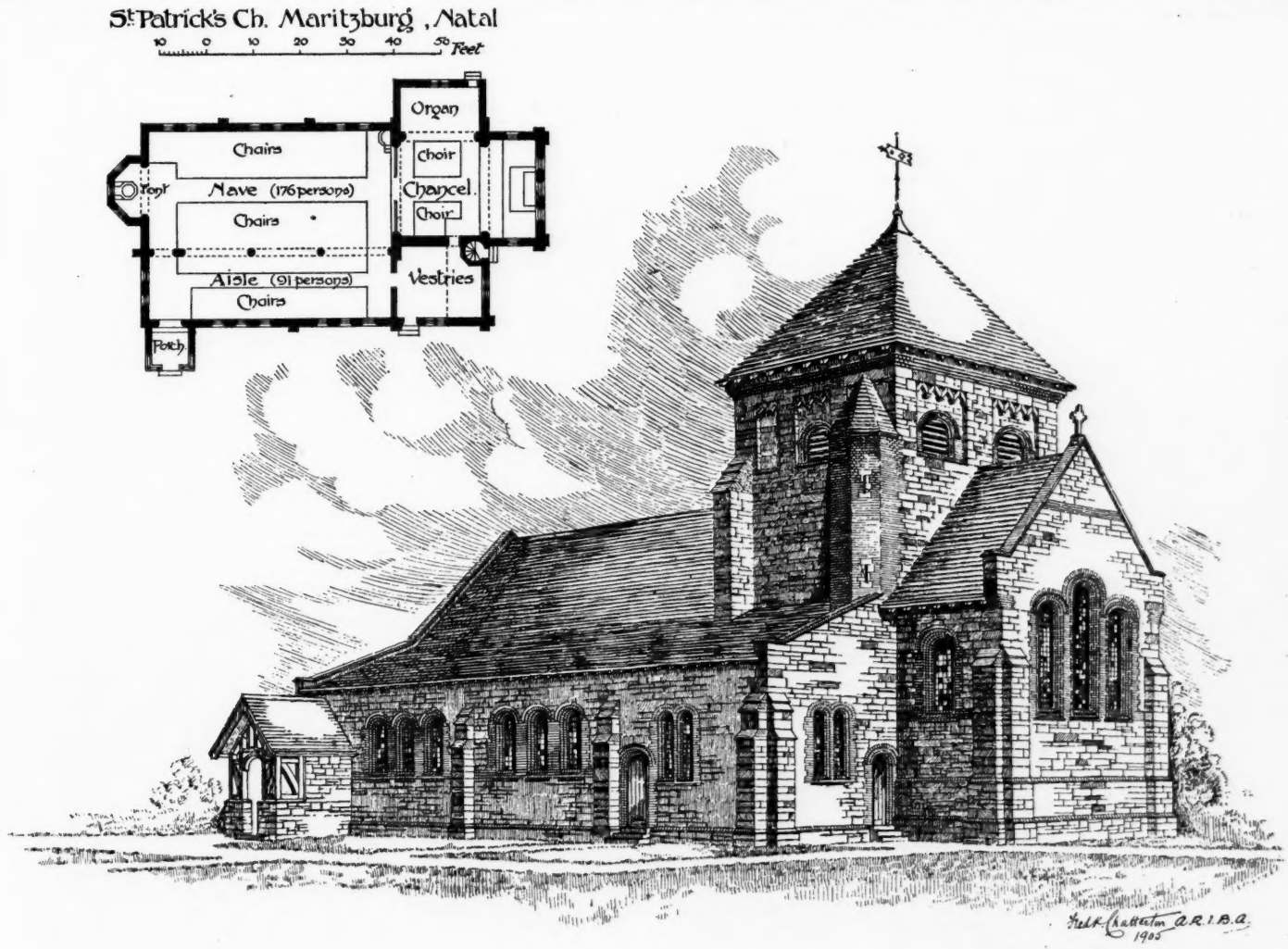
At the conclusion of the repast the loyal toasts were duly honoured. Mr. Scott gave "The Powers that be, including the Mayor and Corporation and the Engineers who have contributed to our instruction and enjoyment." He expressed hearty thanks for the manner in which the visitors had been received, and said that they were delighted with the ancient town of Southampton, and to be so close to the old capital of England —Winchester. He explained how excellently Southampton was placed from a sanitary point of view, and remarked on the very low death rate of the town, which showed how carefully it was looked after with regard to sanitary matters. One thing that had struck him in coming to Southampton was the large number of open spaces there.

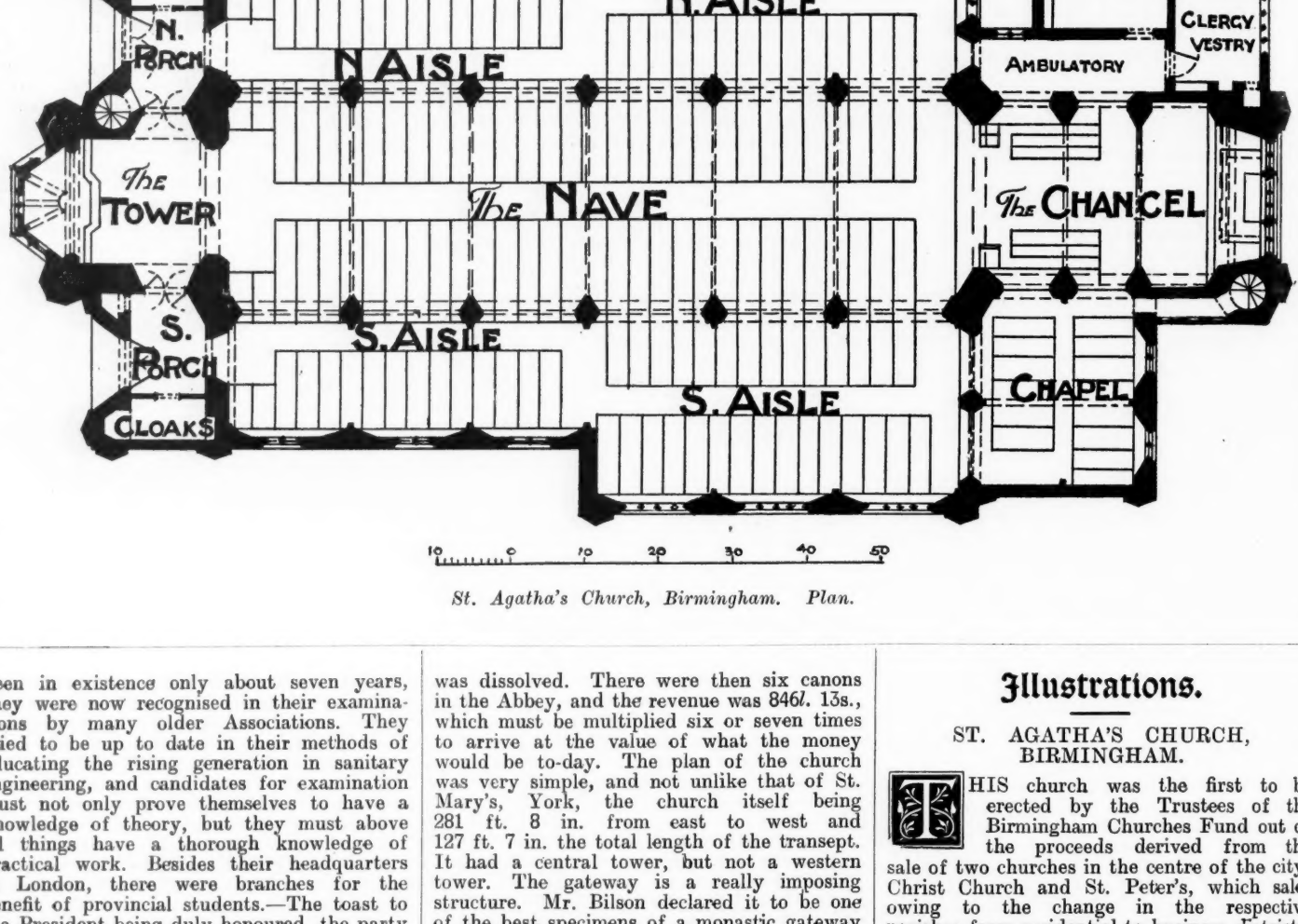
The Mayor, in response, remarked, with reference to the low death rate in Southampton, he believed it was the only town above 100,000 population which was able to claim such a distinction, and he took it that it was due to their President (Mr. Crowther) and the other Southampton engineers, who took such a deep interest in the health of the community.

Mr. Palmer proposed the toast of "The Visitors," Colonel Swalm (U.S. Consul) responding.

Mr. Blakeway gave "The Institute."

Mr. Butcher (Chairman of the Council of the Institute) replied, remarking that, though they were only a young Association, having





St. Agatha's Church, Birmingham. Plan.

been in existence only about seven years, they were now recognised in their examinations by many older Associations. They tried to be up to date in their methods of educating the rising generation in sanitary engineering, and candidates for examination must not only prove themselves to have a knowledge of theory, but they must above all things have a thorough knowledge of practical work. Besides their headquarters in London, there were branches for the benefit of provincial students.—The toast to the President being duly honoured, the party adjourned for a further tour of the Southampton Docks.

ARCHÆOLOGICAL SOCIETIES.

EAST RIDING ANTIQUARIAN SOCIETY.—A party of about forty members and friends journeyed to Thornton Abbey on the 31st ult. in connexion with the East Riding Antiquarian Society's excursion. On arrival the party, led by Mr. J. Bilson, F.S.A., visited the Abbey ruins. Thornton Abbey, Mr. Bilson stated, was founded in the year 1139, and dedicated to the Blessed Virgin by William le Gros, the third Earl of Albemarle and Lord of Holderness, who was also the founder of Meaux Abbey, etc. He died in 1180, forty-one years after the completion of the priory. The foundation was on the feast of St. Hilary, and was for Canons Regular of the Order of St. Augustine. In the following year Waltheof, the first abbot, and twelve brethren left Kirkham Abbey, on the Yorkshire Derwent, to take charge of the Abbey. With regard to the history of the buildings, nothing was known whatever of the first buildings, but it went without saying that there must have been a permanent church and permanent buildings very soon after the foundation. Very likely they started with temporary buildings, but there was no doubt that a XIIth century church and fine monastic buildings were erected on the site. As far as he was aware, however, there were no traces of them left. The fact that those buildings had existed and were not entirely replaced accounted for some misapprehension on that point. After the middle of the XIIIth century was begun what turned out to be a complete rebuilding of the church, and apparently also of the greater part of the monastic buildings. For what was known of the rebuilding and also of the late history of the Abbey they were indebted to a history written by one of the canons in the XVIth century, very soon after the dissolution. In 1308 the buildings were practically completed, and in 1541 the Abbey was dissolved. There were then six canons in the Abbey, and the revenue was 846*l.* 13s., which must be multiplied six or seven times to arrive at the value of what the money would be to-day. The plan of the church was very simple, and not unlike that of St. Mary's, York, the church itself being 281 ft. 8 in. from east to west and 127 ft. 7 in. the total length of the transept. It had a central tower, but not a western tower. The gateway is a really imposing structure. Mr. Bilson declared it to be one of the best specimens of a monastic gateway there is in the country. The licence to crenellate it is dated in the sixth year of Richard II., and no doubt, he said, it was built shortly after 1382, with which dates its architecture agreed. It was richly treated, and was defended on the outside by a portcullis. In the niches five figures were still preserved. The gatehouse was built of stone and brick, and seemed to have been built for the abbot's lodging. Referring to the destruction that has taken place, Mr. Bilson said some of it was due to XIXth century vandals, and therefore it was not surprising to find that Lord Yarborough restricted entry to the ruins, and very rightly made people pay for the privilege.—Tea was afterwards partaken of, and, before the party separated to walk to Thornton Curtis to inspect the church there, a little business was transacted. The Rev. A. N. Cooper, secretary, read a communication from the University of Leeds, which stated that discussions had recently taken place amongst some of those in the Leeds district who were interested in Roman antiquities as to the possibility of making more systematic provision than existed for the exploration of Roman roads, villas, etc., in the county of York, and for the maintenance of a continuous record of discoveries. That interchange of view had resulted in a suggestion that such work could be best promoted by the formation, not of a new independent society, but by the standing Roman Antiquities Committee, formed out of representatives of the various local archæological and literary societies and similar bodies, together with representatives of the Universities of Leeds and Sheffield. It was proposed to call a conference about the end of October or early in November at Leeds for the purpose of discussing the scheme, and the East Riding Antiquarian Society was asked to send representatives to the conference. It was decided to accede to the request, and to leave it to the council of the Society to nominate their representatives. After the church at Thornton Curtis had been inspected the party returned to Hull.—*Eastern Morning News.*

Illustrations.

ST. AGATHA'S CHURCH, BIRMINGHAM.

THIS church was the first to be erected by the Trustees of the Birmingham Churches Fund out of the proceeds derived from the sale of two churches in the centre of the city, Christ Church and St. Peter's, which sale, owing to the change in the respective parishes from residential to business districts, had become unnecessary.

The building, erected from the designs of Mr. W. H. Bidlake, was consecrated four years ago.

The west front presents a lofty tower to the Stratford-road, which it is hoped some day to equip with a peal of eight bells; the rest of the church is more or less hidden by surrounding houses.

The exterior is faced with Staffordshire brick, the interior with a buff-white brick, and the dressings are of Hollington and Bath stones. The spandrils of the nave arcade are in plaster with the view to future decoration. The builders were Messrs. Bowen & Sons.

SKETCHES WITH THE ARCHITECTURAL ASSOCIATION IN NORMANDY.

THESE sketches, and others which appeared in our last issue, were made to accompany the report of the Architectural Association's visit to Normandy. An account of the excursion will be found on another page.

METROPOLITAN WATER BOARD.—In the course of next Session the Board will introduce a Bill to enable them to remove the intake of the Eastern district on the river Lea from Ponder's End to near Fielde's Weir, and to intercept, by means of a main sewer, the sewage between the weir and Bishop's Stortford in the Stort valley and between the weir and Hertford in the Lea valley, with accessory works to purify the source of water supply, at a computed cost of about 775,000*l.* The Board's present undertakings include the construction of a reservoir holding 52 million gallons at Honor Oak, pumping machinery and buildings at Walton, and 12 acres of new filter-beds at Hampton, where a portion of the necessary land is already acquired. Of the total estimated expenditure (514,066*l.*) they anticipate that 200,306*l.* will be required during the year 1905-6; a large part of the outlay was virtually agreed upon before the Board assumed entire powers. The Board have appointed Dr. A. C. Houston as director of water examinations at a salary of 1,000*l.* per annum, the office of Sir James Dewar and Sir William Crookes being abolished.

COMPETITIONS.

SCHOOLS, BEXHILL.—The award of the assessor in this competition, Mr. A. H. Ryan-Tenison, F.R.I.B.A., is as follows:—First premiated design, Mr. H. P. Burke Downing, Merton; second, Mr. W. S. A. Gordon, Catford; third, Mr. Jessop Hardwick, Kingston-on-Thames. One hundred and six sets in all were received.

THE MITCHELL LIBRARY, GLASGOW.—At a recent meeting of the Glasgow Corporation, the Libraries Committee recommended that the premiums of 100*l*., 75*l*., and 50*l*. be paid to the authors of the designs for the Mitchell Library marked respectively Nos. 47, 21, and 55, being the designs respectively placed second, third, and fourth by the assessors. Mr. Alexander Murray moved the adoption of the minute. Bailie Shaw Maxwell moved that No. 55 be placed before the two other designs. Mr. Mathieson seconded. The minute was approved by a majority. The Town Clerk, having opened the sealed envelopes, announced that the authors of the designs Nos. 47, 21, and 55 were respectively Mr. John Arthur, architect, 131, West Regent-street, Glasgow; Mr. Sidney R. Greenslade, 11, Gray's Inn-square, London; and Mr. James R. Rhind, architect, 67, Hope-street, Glasgow.

Books.

Pictorial Composition and the Critical Judgment of Pictures. By H. R. POORE, A.N.A. New York: The Baker & Taylor Company. London: B. T. Batsford.

THIS is a rambling and not very well written book on a subject no doubt of the greatest importance and interest, but on which it is very difficult to formulate any theories which are not liable to be overset if regarded from another point of view, and all but useless to lay down rules. The fact is, all that can usefully be expressed in writing about pictorial composition could be compressed into a few pages. The rest is matter of perception and experience. A number of examples are given in the book, which are often suggestive; but when we find pictures labelled "Opposition of Light and Dark Measures"—"Opposition plus Transition"—"Triangles occurring in the Leading Line," etc., etc., anyone who looks at the compositions so defined can see at once that they might be defined by two or three other different formulæ. The first-named, for instance, might just as well be defined "Horizontal Line interrupted by Dark Mass." Some of the main considerations in regard to the importance of composition are well put in the third chapter, "On Balance"; but the attempt to give a number of definitions only becomes a kind of verbal pedantry. What else can we call such dicta as these?—

"A series of oppositional lines has more picturesqueness than the tangent, its equivalent. A gradation may have the equivalent attraction of an object."

Mere jargon, we should call this. Reynolds, in the passage quoted by the author on pages 158-9, gives the main idea to be kept in mind in studying the composition of existing pictures which are satisfying in effect—to make a small diagram or sketch of the proportions and positions of lights and darks, such as the picture itself might give when seen at too great a distance to see the detail; and Reynolds adds some general results of his observations, but without attempting to deduce any formal rules from them. There are some facts which may be positively asserted—for instance, that a small area of light in an otherwise dark composition is much more brilliant, in proportion to its area, than a large amount of light in a picture where there is little dark. Such statements as these, and some others, can be made as axioms; but beyond that the subject of composition is, as already observed, a matter of experience and perception, and rules and theories are of little or no value.

The book will be of no value to artists, for whom perhaps it is not intended; but though it very much wants condensation and clearness of arrangement, many things in it may be of use to those who look at pictures, in suggesting to their minds points in connexion with art which they have not thought of before. The importance of the placing of figures in a landscape, so that they assist the composition instead of being merely "lugged in," is a point that may be new to many people. We agree with the author as to the bad placing of the figures in Corot's "Orpheus and Eurydice"; though this should have been brought in in connexion with the general subject of figures in landscape, instead of only being alluded to *en passant* on a different page; an instance of the want of plan in the book. The objection to a composition with equal balance on both sides combined with a weak centre, thus cutting the picture in halves to no purpose, is a good point, and is well illustrated in the picture called "The Poulterers," but we do not know that the "Dutch Peasants on the Shore," grouped with it as an example of the same defect, is really in the same category. The balance in this case is not equal; the group of people in the right foreground is the leading motive, the ship in the middle distance is a secondary point, in subordination to the group. "The Poulterers" (by an American artist) is really a picture without any composition at all; the "Dutch Fisher-folk" is not: an example of the difficulty of trying to reduce these things to rules.

The photograph on page 69 of a view taken with a wide angle lens, with the succeeding prints showing how three satisfactory compositions could be made of it by division and omission, is one of the most practical illustrations in the book. This is a way in which photography may very well be used to afford an illustration; but the chapter on "The Place of Photography in Fine Art" sets up a claim to rank photography as an art which is totally untenable. We have heard this kind of argument many times lately, but it does not alter the fact that the interest of even the best photographic exhibition is quite below, and different from, that of even a second-class exhibition of original pictures.

By Nile and Euphrates: A Record of Discovery and Adventure. By H. VALENTINE GREERE. Edinburgh: Clark. 1904.

TO THE archæologist the chief interest in Mr. Greere's book will centre round the author's description of the excavations and discoveries at Nippur (now known as Niffer or Niffar, the Calnech of Genesis). But it is just at this part of his book that Mr. Greere will not let himself go. He refers us instead to his articles in the *Times* of June 2, to the *Monthly Review* for September, 1903, and also to the larger account by Professor Hilprecht himself in his book with the title, "Explorations in Bible-lands During the XIXth Century." We give these references because, on the whole, it would seem to be advantageous to become more or less familiar with the nature of the discoveries themselves before reading the experiences of a member of the exploring party.

Certainly, Mr. Greere's very sketchy treatment of the real object, aim, and end of his sojourn in the East serves but to whet the appetite of the reader, who would like to learn more of those great mounds at Nippur, whose flanks enclose all sorts of structures, from pre-Sargonic city walls to Parthian fortifications; where was found a complete college library of school and scientific books and works of general literature; tombs as late as 14 A.D., and a little palace (discovered in the first "campaigne," as Mr. Greere always calls it), "utterly un-Babylonian" in character; its style, plan, and the refinement of its details being such as to lead the discoverers to pronounce it "unmistakably Hellenistic in its essentials."

Mr. Greere has the real traveller's spirit, and notes with real care and evident zest much in Eastern life which many Europeans never trouble to look for; and thus his book is interesting, and, for anyone contemplating a dash for adventure in Mesopotamia, instructive.

Messrs. Clark's printing is, as usual, excellent, and both the choice and reproductions of the many illustrative photographs as good as is possible with process blocks.

The Venerable Bede: A Lecture by Canon Rawnsley. Sunderland: Hills & Co. 1904.

THE *raison d'être* of this little pamphlet is the national monument erected at Sunderland to the memory of Britain's early historian, Bede. Mr. Charles C. Hodges was the architect of the memorial, and from the drawings and photographs appended to Canon Rawnsley's lecture it would appear to be a very thoughtful design carried out in the style and manner loosely called Anglo-Saxon.

In sixty-four pages the lecturer contrives to convey a great deal of information, and is exceedingly interesting. Some six pages are devoted to early British art, as exemplified by the Anglian stones in the North of England. Until quite lately it was the fashion and habit of those archæologists who busied themselves with the arts of early Britain to describe, under the vague generic term "Anglo-Saxon," every monument which could possibly be regarded as of date anterior to the Norman Conquest. This was to show a fine contempt for history. But even now, when we know, as Canon Rawnsley points out, something of the Italian and Byzantine influences which were affecting the arts of pre-conquest England, we have by no means accounted for all its peculiarities. Professor Baldwin Brown has, perhaps, done more than anyone else to arrange the evidence for genuine Saxon influence. There yet remains to be set at work a great deal of investigation into the probable effect of Norse influence, especially upon Northumbrian art. It is true that very little evidence can be gleaned from early Scandinavian buildings still extant, but of early Scandinavian jewellery there is sufficient to establish a very strong belief that not a few of the apparently indigenous British (some say Celtic) "motifs" hail from the land of those old piratical fellows, the Norsemen.

Society of Engineers: Transactions for 1904. London: E. & F. N. Spon.

YOUNG engineers who contemplate taking up survey work abroad will do well to study the paper contained in this volume on "Railway Surveys and Design in New Countries," by Mr. Percy G. Scott. The contribution in question is full of information, and has the merit of being based on practical experience. Another excellent paper is one by Mr. R. G. Allanson-Winn on "Deep-sea Erosion and Foreshore Protection." The author was the first to suggest that the encroachment of the sea is very often due more to erosion of material below low-water level than to visible causes on the exposed shore. Mr. Allanson-Winn devotes himself to the task of proving the accuracy of this theory, for which he makes a strong case. Other papers of interest to our readers in the present volume are entitled "Some Recent Works of Water Supply at Penzance" and "The Latest Practice in Sewage Disposal."

British Progress in Municipal Engineering. Three Lectures. By WILLIAM H. MAXWELL, Assoc.M. Inst.C.E. London: Archibald Constable & Co., Ltd. 1904.

THIS volume is the first instalment of a series of "National Engineering and Trade Lectures" to be delivered in connexion with a scheme assisted by the Board of Trade, Colonial and Foreign Offices, Colonial and Foreign Governments, and leading technical and trade institutions.

Apart from an introductory review of municipal progress during recent years, the first lecture is little more than an illustrated account of the machinery made by various British firms for use in connexion with the construction, care, and maintenance of roads. Lecture II. opens with a *résumé*, which shows very clearly the marked improvements that have been effected during the last fifty years in the way of sewerage and main drainage systems.

The third lecture commences with a really thoughtful essay on public water supply, illustrated by a map showing the gravitation supplies of various cities in Great Britain, and photographic views of the aqueducts and reservoirs in connexion with some large waterworks systems. The main objects of the lectures are to record the progress made in the manufacture of appliances for municipal engineers, and to advertise the names and addresses of those firms who are so honourably connected with the improvements described by Mr. Maxwell. The classified trade directory forming an appendix to each lecture very much enhances the value of the book to architects and engineers who are not already acquainted with the names of British manufacturing firms interested in the branches of engineering mentioned in the lectures.

The Progress of the German Working Classes in the Last Quarter of a Century. By W. J. ASHLEY, Professor of Commerce in the University of Birmingham. Longmans & Co. 1904.

THIS is not a particularly satisfactory little book. It is too small to be exhaustive, and yet deals so much in details that it does not give us a complete outline of the progress of the German working man. For example, Professor Ashley tells us that the builders (workmen) of Berlin fell (he means the wages fell) from 45-50 pfennigs an hour "in the early seventies" to 30-35 pfennigs in the early eighties, and since that time have gone up to 70 pfennigs per hour, that is about 7d., in 1904. But this is very fragmentary and crude, and we are really not much the wiser as to the condition of the German artisan engaged in building operations from a perusal of this work.

Building Stones, with Numerous Illustrations. Edited by PAUL N. HASLUCK. London: Cassell & Co. 1904.

FORMING one of a series of "Mechanics' Manuals," published in a most convenient size and at a merely nominal price, this handbook contains a comprehensive, though necessarily brief, summary of facts relative to building stones of different kinds. The practice followed in quarrying and blasting stone is very clearly described, some useful notes on selection and testing are given, and five classes of stone, covering the chief varieties used in building operations, are discussed in detail. One of the most interesting chapters in the book, upon "The Weathering of Stones," will well repay perusal. The next chapter includes a handy table, with particulars of about ninety varieties of marble, and the manual concludes with some practical hints upon "Dressing and Polishing Granite." In several chapters the information given is so brief that its chief value is to point out the way to further study, but this is by no means an undesirable feature in an elementary treatise of the kind.

Road and Footpath Construction, with Numerous Illustrations. Edited by PAUL N. HASLUCK. London: Cassell & Co. 1904.

THIS is another of the series mentioned in the notice above. In the introductory chapter we have the inevitable references to Macadam, Telford, and MacNeill, but the reader may congratulate himself on being spared the usual history of road-making from the earliest times. In dealing with macadam road surfaces we are glad to find that the editor insists upon the point that binding material should only be applied after the roller has been passed several times over the newly-laid stones. This certainly assists the natural adjustment of the fragments of metal, and tends to give a well-consolidated road. Macadam contended that binding material was unnecessary, but this view is not generally held in the present day. To insure thoroughly satisfactory results, however, we need far better binding material than that ordinarily employed, and in this connexion it should be noted that in the present handbook the recent application of tar to road-making is briefly discussed. The chapters on stone, wood, and asphalte paving are brought well up to date, and are illustrated by sectional drawings that will be found of practical assistance to the student. The concluding chapter on various kinds of footpaths is equally worthy of commendation, and in our opinion this is a most useful little handbook.

Cassell's Cyclopædia of Mechanics. Edited by PAUL N. HASLUCK. Fourth series. London, Paris, New York, and Melbourne: Cassell & Co. 1904.

THIS is rather a curious mixture of a volume, giving information and illustrations in regard to an immense variety of practical operations, but not arranged, like most cyclopædias, in alphabetical order, nor even grouped in any way in regard to classes of subjects. There is, however, an alphabetical index of subjects.

It is difficult to say exactly to what class of readers it would be useful. For anything like serious study of mechanical subjects it is too rudimentary. It might be useful to householders for information as to simple ways of making or cleaning various things; or it might be a good book to give as a present to a boy who has a turn for mechanical work. We do not think we can say more for it than that; it is a voluminous but an essentially popular publication.

BOOK RECEIVED.

THE LABOURER AND HIS COTTAGE. By Robert Williams and Fred Knee. (London: The Twentieth Century Press, Ltd. 2s. net.)

The Student's Column.

STEAM BOILERS AND PIPES.—VI.

BOILER SETTING.

HAVING discussed the general principles and data governing the design of steam-generating plant and shown how the efficiency of a boiler may be affected by the manner in which the installation has been made and by the employment of auxiliary apparatus for dealing with feed water, we shall now devote attention to the question of boiler setting.

As we have already pointed out, boiler setting is a most important detail in the design of a steam-generating plant. The choice of the place in which a boiler is to be fixed is the first matter for consideration. Far too many boilers have been relegated to out-of-the-way places, where they cannot be inspected without trouble and inconvenience, and where they are apt to suffer from neglect, as well as from the effects of damp. In marine practice it may be necessary to bury the boilers in the depths of a steamship, but on land no occasion arises for analogous practice, except perhaps in hotels, clubs, and other buildings in cities and large towns where yard room cannot be obtained.

The proper place for a boiler is on a perfectly dry seating at ground level, or only so much below it as may be convenient for the delivery of fuel into the coal store and to provide for the return of condense water to the hot well. A light and airy boiler-house conduces to efficient management and inspection and to the well-being of the staff, and is in every way preferable to the dismal underground dungeons once so common, and of which too many still remain.

Cornish and Lancashire Boilers.—Owing to the general similarity in the design of brick-work for Cornish and Lancashire boilers, it will be convenient to consider these two types together.

Assuming a suitable site has been selected, the next point is to provide a dry foundation of sufficient strength to carry the weight of the boiler, with its fittings, mountings, pipes, and setting, and of the water to be contained in the boiler.

It is not an uncommon thing to find in text-books instructions to the effect that the brick-work of a boiler should be laid on a concrete foundation so many inches thick. In one treatise of the kind we are told that the foundation bed should be at least 6 in. thick, and in another that 12 in. is generally sufficient if footings be given to the brick-work.

Vague generalities of this kind are exceedingly apt to lead the uninitiated astray, and it cannot be too strongly emphasised that the bearing power of the soil and the actual weight to be supported per square foot must be ascertained before the proportions of the foundation are settled.

The weight of a Cornish or Lancashire boiler set in the usual manner comes directly upon the two walls forming the sides of the central flue below the furnace tube or tubes. Therefore the main load is concentrated along two lines, and it is necessary to make sure that the earth shall not be subjected to a greater pressure than it is capable of supporting without subsidence of any kind.

In cities and towns special care is desirable, because the soil is very often of artificial character for some depth below the surface.

When the soil is of marshy character, or consists of sand containing water, the whole area to be covered should be excavated to a sufficient depth to provide for a solid foundation slab of concrete, which can then be formed so as to consolidate the material and keep moisture from the brick-work to be built above. Another point deserving consideration is that the heat from a boiler furnace may have the effect of driving moisture out from wet sand to such an extent as to induce settlement of the walls. This is one more reason in favour of a good deep foundation.

When protected from the effects of running water, sand affords excellent support. If not so protected, there may be considerable risk of subsidence.

Soft, damp clay is liable to be squeezed out under heavy loads. Hence it may sometimes be desirable to drain soil of this character, and to take measures for preventing the readmission of water. Hard clays are capable of supporting almost any loads that can be imposed, and the same may be said of the softest varieties of rock.

From the foregoing remarks it will be gathered that the thickness of the concrete foundation may vary from 6 in. up to 18 in. in thickness, according to circumstances.

By making a complete foundation slab, a good solid basis is provided for all the flue walls, as well as for the floor of the bottom flue, and the risk of cracks which sometimes appear in the brick-work is reduced to a minimum.

In arranging the flues for a Cornish boiler, the three following methods of dealing with the furnace gases are available for adoption by the designer:—

(1) The gases leaving the furnace tube of the boiler are led through a side flue; then, after passing below the front end of the boiler, they enter a flue along the other side, and are discharged into the main flue leading to the chimney.

This is the old-fashioned "wheel-draught," now only used in very exceptional cases, as, for instance, when a boiler has to be installed in an existing building where there is not sufficient headroom for other systems of setting. We remember on one occasion being compelled to adopt this method for two Cornish boilers supplied to a building in London, where the height of the only room available as a boiler-house was so limited that every inch became of importance. As very little excavation was permissible, a good deal of scheming became necessary in order to give the necessary space between the top of the safety valve and the under side of the ceiling. Fortunately, such cases are extremely rare.

(2) The gases leaving the furnace tube are split into two streams, each passing along one of the side flues, which meet below the front end of the boiler and pass along a bottom flue to the outlet giving access to the main flue leading to the chimney.

This system of setting, illustrated in Fig. 13, is still adopted to a considerable extent.

(3) The gases leaving the furnace tube are first taken down to a flue under the bottom of the boiler, and on reaching the front end they are split into two streams, each passing along one of the side flues, which finally enter the main flue by separate outlets.

This system, illustrated in Fig. 14, is generally adopted in the present day. The arguments in its favour are that the bottom of the boiler is maintained at a temperature more nearly approaching that of the upper part, because the hot gases come directly from the furnace tube without previous cooling by contact with the sides of the boler, as occurs in the second system.

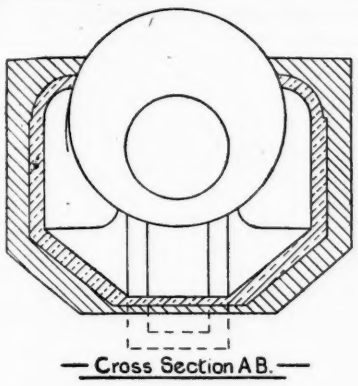
In addition to the greater uniformity of temperature secured, the stratum of quiescent water below the furnace is broken up and the circulation of water in the boiler is improved.

Having decided upon the direction to be taken by the furnace gases, the next thing is to settle the dimensions of the flues.

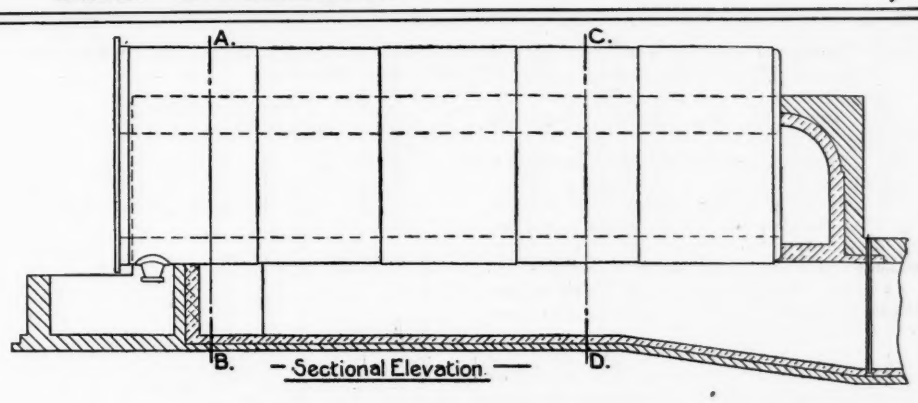
In the following notes we assume that the third of the above-mentioned systems of setting has been adopted, but some of the dimensions given will also be serviceable for guidance in the design of boiler setting upon the other methods.

The dimensions of the various flues depend mainly upon the size of the boiler, but certain minimum measurements must be observed in order that sufficient space shall be provided for ready access.

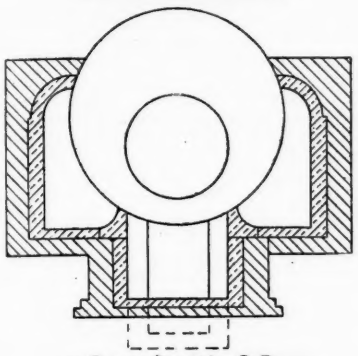
The downtake flue, formed immediately behind the furnace tube at the back of the boiler, should not be less than 1 ft. 6 in. deep measured from front to back, and need not be more than 2 ft. 6 in. deep for the largest Cornish boiler made. The width of this flue is governed by the diameter of the furnace tube, and its side walls should be set back sufficiently to leave the mouth of the tube perfectly free, so that the hot gases cannot impinge upon the brick-work. Except for boilers of the smallest size, this flue has to be



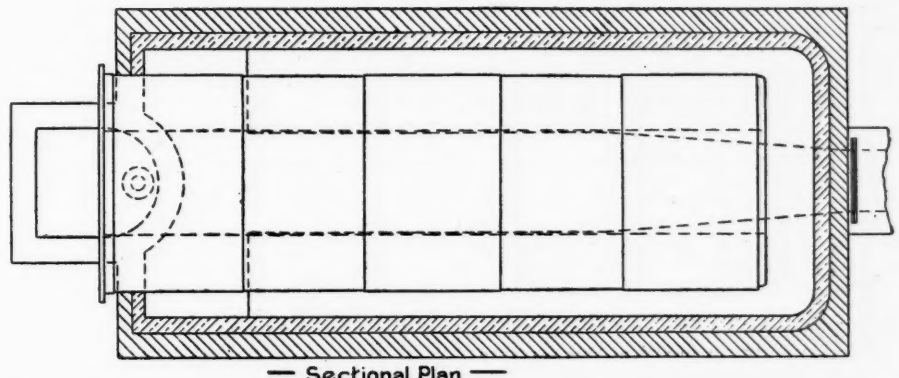
— Cross Section A B. —



— Sectional Elevation —

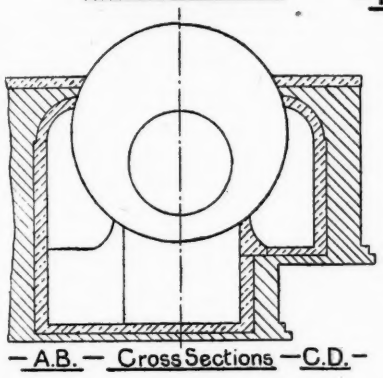


— Cross Section C.D. —

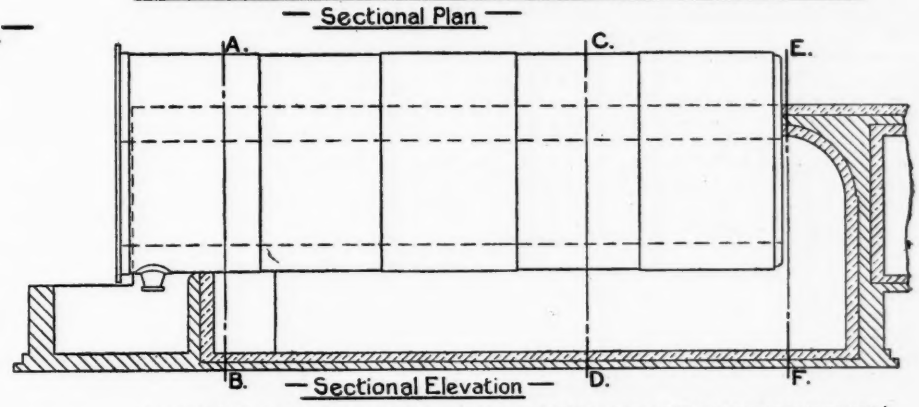


— Sectional Plan —

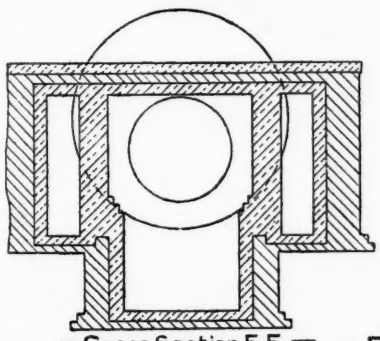
— FIG. 13 —



— A.B. — Cross Sections — C.D. —

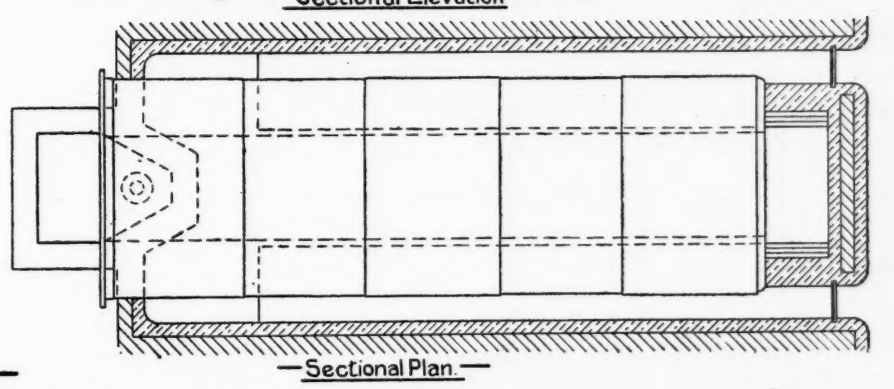


— Sectional Elevation —

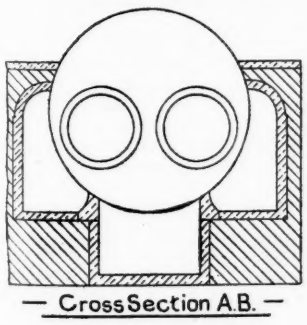


— Cross Section E.F. —

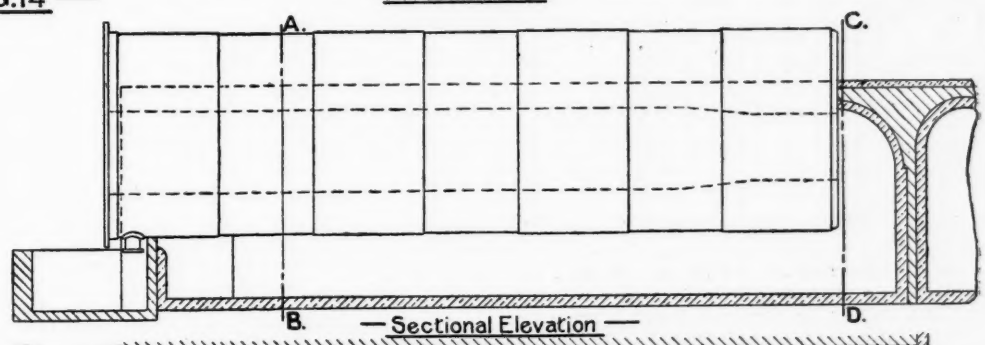
— FIG. 14 —



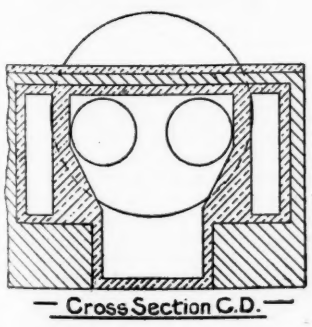
— Sectional Plan —



— Cross Section A.B. —

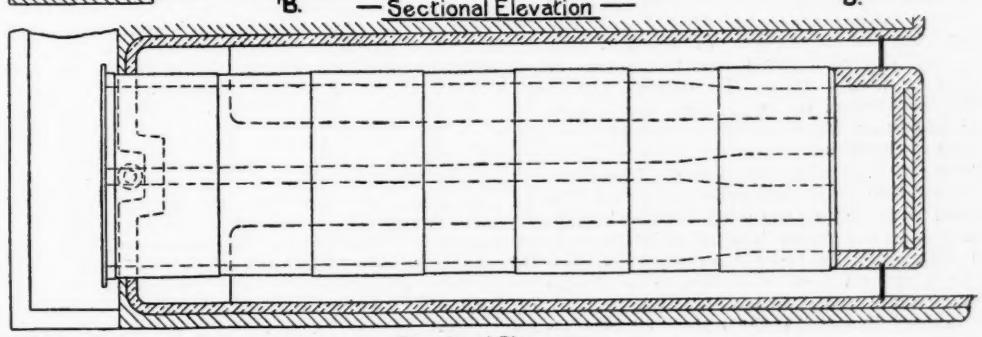


— Sectional Elevation —



— Cross Section C.D. —

— FIG. 15 —



— Sectional Plan —

Illustrations to Student's Column.

tapered down to the width of the bottom flue. The height of this flue is governed by the distance from the crown of the furnace tube to the bottom of the horizontal flue passing below the bottom of the boiler. The top of the downtake, measured from the inside of the arch, should be 3 in. above the crown of the furnace tube.

The bottom flue should never be less than 1 ft. 6 in. high for the smallest boiler, and need not be more than 3 ft. 6 in. for the largest size, these dimensions being taken between the centre of the shell and the floor level of the flue.

The walls of the bottom flue must be stopped at a suitable distance from the front of the boiler to make room for the cross flues leading up to the flues on either side of the boiler.

Measured from the inside of the front cross wall of the setting to the front end of the bottom flue wall, the cross flues should be from about 2 ft. 6 in. to 3 ft. 6 in. wide, so that the space behind the recess wall enclosing the blow-off pipe shall not be too cramped.

The side flues should commence about 2 in. above the crown of the furnace tube and continue down to about the level of the bottom of the boiler, or a little lower, the exact height depending upon the proportions of the bottom flue and of the seating blocks used.

The minimum width of the side flues varies from 6 in. to 12 in. in practice, this measurement being taken at the horizontal centre line of the boiler. Sometimes the side flues are made narrow with the idea of keeping the furnace gases in contact with the sides of the boiler. Nothing is gained by this, as the hotter portion of the gases always rises to the top whatever be the width of the flues. On the contrary, a good deal is lost by adopting narrow flues, for they make it difficult to clean the heating surfaces of the boiler from soot, and thereby result in serious diminution of heat transmission through the plates.

Lack of available space often renders necessary the use of narrower side flues than are desirable. This restriction may be avoided in some cases by the adoption of special forms of material, such as Poulton's serrated brick, by the aid of which several inches can be saved in the thickness of the intermediate and outer flue walls in a battery of two or three boilers.

Table X. gives approximate dimensions for the various flues of a Cornish boiler, but it should be understood that these can be varied according to circumstances, the chief points for observance being the provision of ample space for the gases and for cleaning the flues, and the avoidance of narrow necks and other obstructions to draught.

Further, it may be necessary to vary some of the dimensions given in this table for the reason that the proportions of steam boilers made by different firms are not fixed in accordance with a universal standard.

The dimensions of brick flues for Lancashire boilers are very similar to those required for the Cornish type.

Owing to the width from side to side of the furnace tubes, the downtake flue has to be tapered down to suit the width of the bottom flue. The downtake is often divided into two compartments by a thin, vertical wall between the two furnace tubes, this wall being continued for a distance of about 2 ft. into the bottom flue, with the object of keeping the gases separate, and thus preventing disturbance of the draught.

The other flues are proportioned to the size of the boiler, in accordance with the general rules adopted in the case of Cornish boilers.

Approximate dimensions are given in Table XI. for the flues of Lancashire boilers of various diameters. These dimensions may require slight modification to suit the proportions of the boilers to be installed, and to comply with structural and other conditions.

TABLE X.—APPROXIMATE DIMENSIONS OF BRICK FLUES FOR CORNISH BOILERS.

Diameter of Boiler Shell.	Diameter of Furnace Tube.	Downtake Flue.			Bottom Flue.		Cross Flue.		Side Flues.
		Width at Top.	Width at Bottom.	Front to Back.	Width.	Depth.	Width to Cross Wall.	Width to Recess Wall.	Width.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	in.
3 6	1 9	2 0	1 9	1 6	1 9	1 9	2 6	1 4	6
4 0	2 0	2 2	2 0	1 6	2 0	1 9	2 6	1 4	6
4 6	2 3	2 8	2 3	1 6	2 3	1 9	2 8	1 6	9
5 0	2 6	3 2	2 6	1 9	2 6	2 0	2 10	1 6	9
5 6	2 9	3 8	2 9	1 9	2 9	2 0	3 0	1 6	9
6 0	3 0	4 2	3 0	1 9	3 0	2 3	3 2	1 8	9
6 6	3 3	4 8	3 3	2 0	3 3	2 3	3 4	1 10	9
7 0	3 6	5 2	3 6	2 0	3 6	2 9	3 6	2 0	10

TABLE XI.—APPROXIMATE DIMENSIONS OF BRICK FLUES FOR LANCASHIRE BOILERS.

Diameter of Boiler Shell.	Downtake Flue.			Bottom Flue.		Cross Flue.		Side Flues.
	Width at Top.	Width at Bottom.	Front to Back.	Width.	Depth.	Width to Cross Wall.	Width to Recess Wall.	Width.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	in.
6 0	4 2	3 0	1 9	3 0	2 3	3 2	1 8	9
6 6	4 8	3 3	2 0	3 3	2 6	3 4	1 10	9
7 0	5 2	3 6	2 6	3 6	3 0	3 6	2 0	10
7 6	5 8	3 9	2 6	3 9	3 3	3 8	2 2	10
8 0	6 2	4 0	2 6	4 0	3 3	3 10	2 4	12
8 6	7 0	4 3	2 9	4 3	3 6	4 0	2 6	12

CONSISTORY COURT OF LONDON.

ON July 18 Dr. Tristram, K.C., Chancellor of the diocese, granted a faculty to sanction the Commercial Banking Company of Sydney to enlarge their premises by extending a wide bay window upon steel girders over the churchyard of St. Edmund the King, Lombard-street. The Banking Company will, in return, pay 100*l.* for a term of sixty years to the rector and churchwardens on behalf of the parish. The arguments and evidence adduced in Court showed that the application was of an uncommon character, inasmuch as the main point at issue was whether the land is, or is not, a burial ground within the provisions of the Disused Burial Grounds Act, 1884. The London County Council, who objected to the grant of the faculty, urged that it is, and therefore cannot be built over excepting for the purpose of enlarging the church. It seems that after the Great Fire the church was rebuilt north and south, with the altar in a squared recess at the north end; in that case the west end of the former church stood over the small piece of ground on the west side of the present fabric, over which the bay window would project. The east end stood on the opposite side of the churchyard, now used as a passage and entered from the street; there is no trace of the latter portion having been used for burials. The churchyard, about 45 ft. square, on the north side has remained closed against interments since 1853 by Order in Council. Mr. C. E. Allan, for the petitioners, cited Mr. Justice North's decision in the Ecclesiastical Commissioners and the New City of London Brewery Contract, 1895; the Commissioners contracted to sell the site of All Hallows the Great, Upper Thames-street, then recently pulled down, to the Brewery, and Mr. Justice North decided that buildings on the actual site of that church were not prohibited by the Disused Burial Grounds Act, 1884. The learned Chancellor said that decision was binding upon him in determining that a piece of ground which is set apart for the building of a church cannot be held to be set apart for the purpose of interments. In the London diocese, until July 28, 1841 (at St. Peter's, Bethnal Green), the form of consecration by the bishop embodied two separate sentences of consecration—the one for the church, the other for the churchyard. Dr. Tristram was of opinion that in the case before him the London County Council, for whom appeared Mr. Daldy and Mr. Cornish, had not sustained their objection, and he adjudged that the portion in question of the churchyard formed part of the site of the earlier church and had never been set apart or used for burials. The Court, however, considered that the Council were entitled to their costs, to be paid out of the 100*l.* grant to the rector and wardens. Mr. Cornish, on behalf of the Council, gave notice of appeal. In rebuilding the church, we may observe, Wren cleared the ground for a plan which is not rectangular, nor are its sides parallel; he built the tower in the middle of the elevation to the street, from the face of which it projects only 18 in. In the earlier church was buried, 1563, John Shute, architect and painter-stainer, author of the folio volume "The First and Chief Grounds of Architecture," being one of the first works upon practical architecture published in this country. Butterfield restored the fabric in 1865; the register contains an entry of the marriage on August 9, 1716, of Addison and Charlotte Countess Dowager of Warwick and Holland.

At the same sitting of the Court Dr. Tristram granted a faculty to the vicar, the Reverend V. G. Borraidale, who moved in person, for the carrying out of some alterations and improvements of St. James's Church, Hampstead-road, to consist of the removal of part of the gallery for the provision of a side chapel and of additional vestry and seating accommodation. The Court at the same time suggested that some trellis work should be erected to separate the side chapel from the west end of the church. The church was built as a chapel-of-ease to St. James's, Piccadilly; the burial ground, opened to the public in August, 1887, was formed in the fields between a reservoir of the New River Company (now the site of Tolmer's-square) and Rhodes's farm. One of the first interments was that of Lord George Gordon, who died in Newgate Prison in 1793; there, too, were buried John Hoppner, portrait painter, and, near the north gate, George Morland.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Managers was held on Saturday last week at the offices.

New Central Stores.—The Asylums Committee submitted amended plans for a new central stores at an estimated total cost of 22,000*l.* They pointed out that their intention as regarded these new stores was simply that adequate accommodation should be provided for the convenient reception, examination, storage, and issue of goods to meet the requirements of the numerous institutions with reasonable promptitude. The plans were approved, and, subject to their approval by the Local Government Board, the Works Committee were instructed to take all necessary steps for carrying out the work without delay.

New Workshops at the North-Eastern Hospital.—A report of the Hospitals Committee recommending the erection of a new boiler-house and workshops at the North-Eastern Hospital, and asking the Local Government Board to give its assent to the work, was adopted. The scheme provides for the provision of workshops for the painters, fitters, and carpenters, and space is left for an electrical workshop and store in case it is found advisable to install electric light plant at the hospital in future. The estimated cost of the scheme is about 16,000*l.* Messrs. W. H. Barber & Son, of 22, Buckingham-street, Adelphi, were appointed to take out the quantities of the proposed new boiler-house and chimney shaft at a commission at the rate of 1½ per cent. upon the amount of the accepted tender. The estimated value of this portion of the work is 4,100*l.* Messrs. Fowler & Hugman, of 9, Craig's-court, Charing Cross, were appointed to take out the quantities of the proposed alterations and additions at the Millfield Homes, which are being carried out at an estimated cost of 2,500*l.*, at a commission at the rate of 2½ per cent. upon the amount of the accepted tender.

Central Coal and Coke Store.—A plan prepared by Messrs. Treadwell & Martin, architects, for the provision at the Southern Hospital of a central domestic coal and coke store at an estimated cost of 850*l.* was approved.

Cost of Works.—A statement was submitted by the Accountant showing the estimated and actual cost on completion of the following works:—Erection of laundry at the Down School, estimated 13,650*l.*, actual 11,660*l.* 7s. 6d.; fire-resisting works at the Fountain Hospital, 15,000*l.*—14,918*l.* 19s. 4d.; accommodation for small-pox nurses at the South-Eastern Ambulance Station, 1,900*l.*—1,625*l.* 5s. 6d.; and receiving home for children and ambulance station at Tooting Bec Asylum, 17,533*l.*—14,082*l.* 16s. 10d. The

Engineer-in-chief also reported the completion of the erection of sanitary annexes at Caterham Asylum by Mr. T. Cole at a cost of 2,378*l.* 6s., or 49*l.* 7s. 7d. in excess of the contract sum, and of the provision of pipe trenches at the North-Western Hospital by Mr. T. Cole at a cost of 60*l.*

GENERAL BUILDING NEWS.

CHURCH, SEAHAM HARBOUR.—The New United Methodist Free Church at Seaham Harbour has been built to replace the former one destroyed by fire last year. The approximate cost of the new building is 4,000*l.* The new church and school occupy the site of the old one in Church-street. The front elevation is of stone and red pressed bricks in the Renaissance style. Accommodation has been provided in the church for 600 people. In the rear of the building on the ground floor there are a lecture-room, classrooms for young women and young men, and a minister's vestry. There is a sliding shutter between the lecture-room and the young men's classroom for enlarging purposes. On the first floor behind the church is the Sunday school, which will accommodate about 300 scholars on the floor and in the gallery above. The work of erection has been carried out by Mr. W. B. Cooper, contractor, of Sunderland, from the designs and under the supervision of the architects, Messrs. W. & T. R. Milburn, of Sunderland.

BIBLE CHRISTIAN CHURCH, WHIDDON DOWN, DEVON.—The foundation-stones were laid, on the 31st ult., of a new Bible Christian Church at Whiddon Down, near Chagford. Mr. J. Crocker, of Exeter, is the architect. The chapel is to be of granite, with granite dressings and mullion windows, with leaded lights. Seating accommodation will be provided for about 200 persons.

CHURCH RESTORATION, CLEVEDON. — After undergoing restoration, under the supervision of Mr. W. D. Caröe, the old parish church of Clevedon was re-opened on the 25th ult. In the nave of the church there was formerly a plaster ceiling, with a few iron tie rods, but this has given way to an open-timbered oak roof, and, where possible, spandril pieces of the wood of the old roof have been retained in the reconstruction. Wood blocks have taken the place of the old platforms. The top of the aisle roof is covered with Pyramont rock asphalte. In opening out the north transept roof an early Norman window has been discovered. It was covered with lath and plaster, but is now left in its original state, high up in the wall, and glazed. A doorway has been cut from the old vestry into the chancel, and the floor of the vestry lowered to give better access. There are new altar-rails, and the pulpit has been reconstructed. A double piscina was revealed by taking away the organ.

CHURCH BUILDINGS, HAMPSTEAD.—The new church buildings at Lyndhurst-road are now nearing completion. The work consists of a hall on the ground floor to seat 450 persons, for the use of the Sunday school, for church meetings, lectures, etc. On the first floor over the hall, nine classrooms are provided, also a ladies' committee-room and cloakroom adjoining. The portion of the old church-room left now forms the guild-room and church parlour, and will seat about 160 persons. On the second floor, above the classrooms, accommodation is provided for the caretaker, consisting of a kitchen, scullery, parlour, and three bedrooms. Where the caretaker's cottage stood premises have been erected for a boys' club, consisting of two rooms, one on the ground floor and the other above, with library adjoining. The estimated total cost is 10,000*l.*, and the architects are Messrs. Spalding & Spalding.

CONGREGATIONAL CHAPEL, EATON, NORWICH.—The foundation stone of the new Congregational church, which is being built at Eaton village, was laid recently. The structure faces north and south; it has east and west transepts, which can be shut off from the body of the chapel by moveable partitions so as to be useable as classrooms; and there will be a hundred and fifty sittings provided in all. It will be a brick-and-tiled building, with moulded dressings. The main elevation, which looks on to Church-lane, has a four-light traceried window, and the main entry is by a porch on the west side. The architects are Messrs. Boardman & Son, and the builder is Mr. E. J. Taylor, of Cringleford.

METHODIST CHAPEL, LONAN, ISLE OF MAN.—The foundation-stones of the new chapel which is to be erected at Lonan were laid recently. The building is to accommodate about 160 persons, and has been designed by Mr. J. T. Boyde, of Ramsey, Mr. R. Corlett, of Laxey, being the contractor.

MEMORIAL SCHOOL, SNAPE.—The new Snape memorial school has just been opened. The building consists of three rooms, the large school-room being in the centre, with accommodation for 140 scholars. A corridor gives access to the rooms; at either end are entrances for girls and infants and boys respectively. On the other side of the corridor are cloakrooms, lavatories, caretaker's-room, with stairs to basement and storeroom. Asphalted pathways lead to the outbuildings, in which are a pump-house and cistern-room. The heating is by hot water, with radiators, from a boiler in the basement. The buildings are in the Tudor style of architecture, and were designed by Messrs. Bisshopp & Cautley, of Ipswich. Mr. H. Pulham, of Tunstall, was the builder, and Mr. E. Scott, of Ipswich, was employed for the heating apparatus.

SCHOOL BUILDINGS, WALSALL.—Alderman T. P. Brownhill, Chairman of the Walsall Education Committee, recently opened a new block of school buildings which has been erected at the Chuckery, Walsall. The schools consist of two mixed departments, one for seniors and another for juniors. In addition to large asphalted playgrounds, considerable areas are set apart for gardens for the children with a view to instruction being given in gardening. The architects were Messrs. Bailey & McConnal. In addition to five classrooms and teachers' rooms, there is a central hall, 54 ft. by 24 ft., which can be used in wet weather for drill and also for science work, while it is proposed to provide a gymnasium for the junior classes.

EXTENSION OF BRADFORD CHILDREN'S HOSPITAL.—Viscount Mountgarret opened on the 2nd inst. the new out-patients' department of the Bradford Children's Hospital. The new building, which has been erected from the plans of Mr. James Ledingham, is situated quite close to Bertram-road, on land which formed part of the grounds of the hospital, the object in making it a separate block being that it should not interfere with any future development of the older building. It comprises a waiting-hall, capable of accommodating 200 patients, with registration, consulting, and operating rooms, a dispensery and drug store, and the curator's residence. In style it is in keeping with the other hospital buildings. The fittings are of pitch-pine varnished. It is estimated that the cost of the building, including fittings and the adaptation of the old out-patients' department to other uses, will amount to about 1,900*l.*

HOSPITAL EXTENSION, ESTON, CLEVELAND.—On the 29th ult. the new extension hospital at Eston, near Middlesbrough, was re-opened. The premises provide accommodation for about seventy beds. The east wing of the hospital has been enlarged, and an upper ward has been added, which is to be known as the children's ward. The bottom ward is intended to be used for the treatment of male medical cases. The west wing of the hospital has been remodelled. A ward has been made on the ground floor, and an upper ward has been constructed. Mr. W. S. Roberts was the architect for the work, the cost of which was about 5,000*l.*

PARISH HALL, SOUTHBOURNE.—The new parish hall for St. Katherine's Parish, Southbourne, was opened a short time ago. The building was designed by Mr. G. A. Bligh Livesay, architect, and is in Queen Anne style, the facings of the exterior being composed of Milton red facing bricks and Portland stone dressings, and the roof of dark Broseley tiles. The main hall is 60 ft. long and 29 ft. 6 in. wide, with a wing on the north 22 ft. by 10 ft. It is capable of seating 400, and is lighted by six windows, and the heating is by series of gas stoves, the artificial lighting being electricity. The contractors were Messrs. Miller & Sons, of Bournemouth, and the cost was over 2,000*l.*

GLADSTONE CLUB, SOUTHAMPTON.—The Gladstone Club Building Co., Ltd., was formed some years ago for acquiring the club properties, and the present scheme for enlarging the club and adding some new features provides for the pulling down of a plumber's shop and other old buildings, erecting on the site two lock-up shops on the ground floor, also a large meeting-room (or trades hall) on the first floor, and steward's apartments on the second floor. Plans were drawn by Mr. J. H. Blizard, F.S.I., and the work has been entrusted to Messrs. Jenkins & Sons, builders, of Southampton.

WORKMAN'S DWELLING, DUBLIN.—The new workman's dwelling, which has been erected on Bride-road, occupies a site having a frontage of 196 ft. to Bride-road and a depth of about 100 ft., and is five stories in height, exclusive of the basement. The general outline is that of the letter Ш, this form giving, it is thought, the greatest possible facilities for the complete lighting and ventilating of the 516 cubicles occuyping the four floors above the ground story, while the open spaces between the limbs of the Ш afford airing ground and courtyard. The elevation is of red brick facings, relieved with artificial stone of red tint. All the floors and roofs are of fireproof construction, and the stairs, landings, and passages are of granolithic material. The building is entered by a porch and vestibule in the centre of the frontage. On the right is the office, with pay counter, where lodgers will receive admission; while adjoining the office are the superintendent's quarters. The lodger on entering passes through a short passage into the great corridor running from east to west of the building, and from which he will have access to the following apartments:—A dining-room, about 62 ft. by 50 ft., with tables and seats able to accommodate 230 lodgers at one time; a smoking-room, 48 ft. long and 41 ft. wide; a reading-room, 50 ft. long and 19 ft. wide; two halls containing lockers, where each lodger can deposit his possessions under lock and key; a shoemaker's shop, with space for boot-cleaning, and a tailor's shop. Lodgers will be able to cook in the dining-room victuals that they may purchase outside, or those that they buy in the catering department of the lodging-house. For the latter purpose a shop is provided, opening into the dining-room, where food, raw or cooked, will be sold approximately at cost price. A staircase leads to the basement, which is practically a lower ground floor. There are a lavatory, 46 ft. by 18 ft., fitted with forty-seven basins; six bath-rooms, and two dressing-rooms, a row of 6 ft. baths, a wash-house, with arrangements for the rapid washing and drying of linen, and a barber's shop. In the basement are also situate, but with separate accesses, the boiler-house and coal store, the porter's common-room, and the luggage-room. The domestic servants' common-room, and four bedrooms, with separate access, are also in the basement. The linen stores, household stores, and general domestic offices as well as part of the superintendent's quarters, are in the front part of the basement, separately accessible from the ground floor. The four upper floors, containing the 516 cubicles, are reached by three fireproof staircases. All the four floors are similar in arrangement, a long central corridor 4 ft. wide being placed in each limb of the building with the cubicles disposed on each side of the corridors. Each cubicle measures 7 ft. 6 in. by 5 ft., and has its own window. The divisions are made of wood, finished at a distance of 18 in. from the ceiling so as to secure ventilation without interference with privacy. The building has been erected from the designs of Messrs. Joseph & Smithem, of London, and under the supervision of Messrs. Kaye, Parry, & Ross, Dublin, the contractors for the general works being Messrs. S. H. Bolton & Sons.

BRADFORD TOWN HALL EXTENSIONS.—The foundation-stone was laid on the 28th ult. of the Town Hall extensions. The area upon which the Town Hall now stands is 2,500 sq. yds., with a total floor space of 56,900 sq. ft., and the area reserved for the extension is 2,211 sq. yds., with a prospective floor space of 63,400 sq. ft., exclusive of the sub-basement and attics. There will be as little disturbance as possible of the existing fabric, and the unity of architectural features will be so preserved as to give the appearance of a complete building under one roof. The contracts already let provide for the whole of the work up to the level of the ground floor, and amount to 10,969*l.* The scheme was prepared by the City Architect (Mr. F. E. P. Edwards) in consultation with Mr. R. Norman Shaw, R.A.

FREE LIBRARY, ABERYSTWYTH.—The foundation-stone of the Carnegie Free Library at Aberystwyth was laid on the 28th ult. by Mr. David Davies, J.P. The library is being erected at a cost of 3,000*l.*, and the plans for the buildings were by Mr. Walter G. Payton, Birmingham, and were selected by the assessor, Mr. S. B. Russell, from among forty-eight others. They provide for a newsroom, with stands for sixteen newspapers and seats for thirty-six readers; a lending library, arranged on the open-access system, allowing the public to choose their own books, with shelf accommodation for about 10,000 volumes; a reference reading-room, with seats for thirty-two readers and shelving for 2,000 volumes; magazine-room or school of art on the first floor, having an area of 1,458 sq. ft.; librarian's office and committee-room, lavatories for both sexes, cleaner's store, heating chambers, etc. The contract has been let to Messrs. Edwards Brothers.

MEMORIAL HALL, BALLYCASTLE.—The laying of the foundation-stone of a new hall, to be erected in memory of the late Rev. Dr. M'Alister, Roman Catholic Bishop of Down and Connor, was performed on the 26th ult., at Ballycastle. The contractor for the work is Mr. Bernard Boyle, of Ballycastle; while Mr. James A. M'Cormick, Coleraine, has prepared the plans.

BRANCH READING-ROOM, BELFAST.—The reading-room provided in the new premises built by the York-street Flax Spinning Company, Ltd., in Henry-street, was formally opened on the 27th ult. by Alderman Sir James Henderson, D.L. The premises have been built by Messrs. M'Laughlin & Harvey, Ltd., from the plans of Mr. A. Basil Wilson.

RESTAURANT, ALDERSHOT.—The opening of the Cecil Restaurant in High-street, Aldershot, took place recently. The work in connexion with the building has been carried out by Mr. Cæsar, builder, of Hale, under the direction of Mr. S. Friend, who was the architect. The furniture was supplied by Messrs. T. White & Co.

GYMNASIUM AND BATHS, DUNFERMLINE.—The Carnegie Gymnasium in Dunfermline, which has cost, together with the baths, nearly 40,000*l.*, occupies a site in Pilmuir-street. The gymnasium has a floor area of 103 ft. by 45 ft. The water area of the swimming-bath is 75 ft. by 35 ft., and on two sides are fifty-one dressing-boxes, entirely of teak. At one end of the hall are footbaths and sprays and superintendent's room. There is a gallery along three sides, and this accommodation, including the movable seats in the area, affords sitting room on gala occasions for 1,000

persons. The decoration is from designs drawn by the architect, Mr. Blanc, and has been executed by Mr. Don, painter.

IMPROVEMENT OF THE TOWN HALL, BIRMINGHAM.—The alterations which are being carried out at the Birmingham Town Hall have involved the reconstruction of the orchestra, an improvement of the existing exits, and the provision of others, as well as the provision of proper sanitary arrangements. Mr. Fred Martin, of the firm of Martin & Martin, architects, Birmingham, prepared the plans. The whole of the work will cost about 6,000*l.*

NEW OFFICES FOR THE "YORKSHIRE POST," FLEET-STREET.—The new London offices of the *Yorkshire Post* at 171, Fleet-street, built under the supervision of Mr. J. M. Anderson, are mainly in Portland stone. It is a structure of six stories. The walls of the ground floor and staircases throughout are covered with Burmantofts tiles from Leeds, and the walls of the basement, containing storage for newspaper files and a dining-room for the staff of clerks, are covered with white tiles. The builder was Mr. J. Darch, Mr. J. A. Spooner being the clerk of the works and Mr. H. England the architect's surveyor.

HOSPITAL EXTENSION, BARNSTAPLE.—Additions and alterations are to be carried out at the North Devon Infirmary at Barnstaple from plans prepared by Mr. J. C. Southcombe, architect. The scheme provides for the addition of sixteen men's beds, twenty for women, and fourteen for children, making a total of fifty.

WAR MEMORIAL, CHATHAM.—On the 26th ult. the King unveiled the Royal Engineers' War Memorial at Chatham. It consists of an arch, and was designed by Mr. E. Ingress Bell, architect. A feature of the structure is a series of sculptured panels in high relief. The alto-relievos are by Mr. W. S. Frith. The composite capitals to the columns, the keystones of the arch (figures of Victory), and the spandrels are the work of Messrs. Fagan & Bell. The marble tablets and inscriptions are by Messrs. Farmer & Brindley, and the copper lamps on the detached piers are by Messrs. Thomas Elsley & Co. The general contractors are Messrs. Longley & Co., Crawley, Sussex.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, MORTEHOE.—A new water supply for Mortehoe and Woolacombe was inaugurated on the 1st inst. The new supply is an extension of the Ilfracombe undertaking—the 4½ miles of iron pipe necessary to connect with the Ilfracombe mains, having been laid in nine months. Mr. O. M. Prouse, Surveyor to Ilfracombe Urban Council, has acted as engineer for the scheme, which involves an expenditure of about 7,000*l.* for the laying of the pipes from Iron Gate to Woolacombe, and an additional sum of 2,000*l.* will be devoted to the building of filter-beds.

LARGE STEEL CASTINGS.—In the construction of the piers of the Blackwells Island bridge, between New York and Brooklyn, some steel castings of remarkable size are being used. One of these measures 12 ft. 2 in. square at the base, 10 ft. 5 in. by 8 ft. 5 in. at the top, and 45 in. high. Three furnaces were necessary for pouring this casting, which weighs nearly 90,000 lb. It consists of a network of ribs radiating from a central column, and completed by top and bottom plates; the metal being nearly 3 in. thick throughout.

BRIDGE, MAR LODGE, N.B.—The new Victoria Bridge across the Dee, erected by the Duke of Fife at Mar Lodge, has just been completed. It measures from abutment to abutment 201 ft. 6 in., and the width between the girders is 12 ft. It is in three spans, with two piers, of granite, in the river. The girders are 6 ft. 2 in. deep, with flanges 12 in. wide, and are of parallel double Warren type, with sway bracings every 13 ft. The flooring is of continuous steel troughing. The roadway is of tar macadam, with cement concrete channel on either side to carry off the surface water. There is an ornamental cast-iron railing with moulded cope running the length of the bridge on each side. The piers are of hammer-blocked rustic granite. The bridge has been built to the design and under the superintendence of Mr. P. M. Barnett, C.E. The foundations and mason work of the piers and the tar macadam of the roadway have been executed by Mr. George Hall, builder, Aberdeen; and the steel work by Messrs. James Abernethy & Company, Ferryhill Foundry, Aberdeen.

REFUSE DESTRUCTOR, WORTHING.—A visit was recently paid by members of the Worthing Town Council to the new refuse destructor works, which have been installed at the eastern extremity of that town. The new buildings and chimney shaft have been erected from the designs of Mr. F. Roberts, A.M.Inst.C.E., the Borough Engineer and Surveyor, who also superintended the whole of the work. The builders were Messrs. Rowlands Brothers, of Horsham, and the entire cost amounts to 6,500*l.*

PROPOSED DRAINAGE AND STREET WORKS, SOUTHEND.—Col. A. C. Smith, R.E., Local Government Board Inspector, held an inquiry at the Southend Council Chamber recently with reference to the application by the Council for sanction to borrow 22,876*l.*, being 20,500*l.* for a system for surface water drainage for a part of the Borough west of High-street, 1,876*l.* for street improvements in London-road and Southchurch Beach-road, and 400*l.* for a water supply to the new conveniences on the pier extension. The town Clerk said, in connexion with the first item, the scheme was for the purpose of easing the existing sewers, and if not done it would necessitate the laying down of larger sewers. The Borough Engineer (Mr. E. J. Elford) submitted plans and details. The Town Clerk, with reference to the second application, said it was divided into two portions, 1,500*l.* for widening and improving London-road, and the balance in respect of improvements in Southchurch Beach-road. The Borough Engineer also gave details. The remainder of the loan (376*l.*) was for the purpose of constructing a footpath along Southchurch Beach-road, where up to now there had been no footpath. This concluded the inquiry.

PRINCE'S BRIDGE, MANCHESTER.—This structure, which forms a connexion between Water-street and Ordsall-lane, replacing a previous bridge erected in 1863, has just been opened. The plans and estimates were prepared by the City Surveyor, and the work, intrusted to Messrs. Morton & Co., of Garston, has been completed at a cost of 12,500*l.*

MISCELLANEOUS.

CHERBOURG QUARTZITE.—Mr. Consul Loftus, in his report for 1904, writes:—The stone quarries situated near Cherbourg attract many smaller British vessels and barges which come over empty to load with stone. Owing to the high customs tariff levied on all British manufactured goods introduced these vessels are obliged to come over empty or in water ballast. The stone exported from Cherbourg is almost exclusively used for road-making purposes. This trade has shown a very considerable falling-off, attributable to German stone now exported from the Rhine district to the United Kingdom. Nevertheless the Cherbourg stone, if somewhat soft, has for many years maintained a high reputation in the market. The stone is a grey quartzite, and is broken by hand, as this method, although apparently antiquated, has nevertheless proved more effective and satisfactory than the application of machinery. The stone is broken into cubes varying in size from 1½ in. to 2½ in. It is then passed through revolving drums, driven by steam, by means of which a more accurate and precise size is obtained. The stones are shipped to Swansea, Dover, Faversham, Poole, Rochester, Strood, Margate, Ramsgate, and Thames ports. There are three principal stone-exporting companies, *i.e.*, two British and one French—The Kent-road Maintenance Company, the Gravesend Quartzite Company, and La Compagnie des Carriéres de l'Ouest, with head office in Paris. There are in addition several smaller stone exporters who rent quarries or parts of quarries. The amount exported in 1904 (92,900 tons) shows a decrease on the amount exported during the previous year of 26,037 tons. Cherbourg quartzite is extensively used, and is in high estimation in France, a country renowned for its good highways.

PUBLIC WORKS IN GENOA AND DISTRICT.—The British Consul-General reports that the pulling down of old streets and the building of new ones goes on at a great pace in Genoa. The enlargement of the principal railway station is nearing completion, and the new portion is now in use, by which Genoa is no longer a terminus. The Brignole new station is also nearly completed. There have been several schemes submitted for further improvements, but so far none of them has been finally accepted. It is stated that the work of enlarging the port of Genoa is to be begun this year. The cost of the enlargement is estimated at 2,000,000*l.* This work is one of the very greatest importance to Genoa, and, indeed, to Italy in general, especially now that the Simplon Tunnel is about to be opened, and it is of the utmost importance for the welfare of the port that the railway question should be immediately settled, and that every provision should be made for the speedy handling of an increase in seaborne imports, which it is only reasonable to anticipate. No progress has been made in the competition for the best plans for the drainage of Spezia and suburbs, for which the municipality has offered a prize of 400*l.*, open to international competition. It has been found necessary to postpone the final date on which schemes may be presented by intending competitors. At San Remo a new casino has been erected on the site of the old public gardens. A new post-office has also been erected.

SWEDISH GRANITE AND WOOD EXPORTS.—Mr. Consul Duff reports from Gothenburg that granite quarrying, the most important industry on the west coast of Sweden, has latterly been in a languishing state, and the outlook is not cheering as to the future, for in the case of Germany, the largest and most important customer, tariffs are tending to annihilate the trade. There has been a falling-off in the export to the United Kingdom, but it is hoped that a revival will take place, for the excellence, strength, and beauty of the granite exported from this district have, wherever introduced, secured the market, even where the distance of transport has been an obstacle. At the works of the Halmstead Stone Cutting Company's establishment at Hjelmedal on the Bro-fjord, there have been laid extensive foundations for machinery for the purpose of manufacturing paving-stones similar to what is already taking place in the province of Blekinge, and on the island of Bornholm. This is with the object of being not altogether dependent on the workmen. Few wood exporters will be able to look back upon the campaign of the year 1904 with anything like satisfaction. Yielding and wavering prices were characteristic throughout the year. Contracts of earlier date certainly show higher prices than obtained later, but these have been materially reduced by disputes, which during the past year have, on an average, been of greater frequency than in previous years has been the case. The fall in price (which has affected all kinds of goods, sawn and planed, round as well as hewn timber) has chiefly touched deals and battens, the former to the figure of 30 per cent., and the latter to about 15 per cent. upon last year's prices. Scantlings and deals of smaller dimensions were not reduced until towards the close of the season. The figures of export are, of course, smaller last year than 1903. They are likely to be about 15 per cent. less. The greatest diminution has been in the South African market, for which probably not half the export of 1903 has taken place. The disappointment encountered in this market may chiefly be looked upon as the principal cause of last year's considerable fall in prices. The larger exporters have made preparations for a good turnout. When these expectations were frustrated they were forced to accept the reduced prices of other markets, and then commenced the weakening state of affairs which have in no wise been improved by the prevalent political uncertainty. Not a few sales have lately been effected, but no contracts of any magnitude have been entered into.

DANTZIG TIMBER TRADE.—Col. Brookfield, reporting on the commerce of the consular district of Dantzig (which comprises East and West Prussia, Posen, and Silesia) for 1904, states that business in the timber trade was much restricted owing to the drought. Sea freights were low, and there was a plentiful supply of wood from Russia and Galicia; but with no water with which to float the rafts down everything was brought to a standstill, and wood ready to be sent down in April had to wait till September before it could be dispatched. The total number of rafts which reached Dantzig was 205, consisting of 190,686 loads (English measurement), and representing a value of 458,839*l.* The chief demand from the United Kingdom was for railway sleepers, and Dantzig shippers complained that for other purposes, such as building, there was a decided stagnation in the British market. On the other hand, there was a very animated demand from Belgium, the Netherlands, and especially from Germany itself. The war, it may be mentioned, did not have any effect on the quantity of wood produced in Russia, though it is found more difficult, both there and in Galicia, to procure wood of finer qualities. The following were the Dantzig exports of wood for the year:—To United Kingdom, 78,730 tons; Belgium, 21,882 tons; Denmark, 2,526 tons; France, 888 tons; Netherlands, 12,577 tons; Russia, 110 tons; other parts of Germany, 50,406 tons: total 167,119 tons, compared with 324,648 tons in 1903, and 242,308 tons in 1902.

WESLEYAN CENTRAL HALL, WESTMINSTER.—In our issue for July 29 the name of one of the three architects concerned in the design which we published of the Wesleyan Central Hall was given as "Savidge." It should have been "R. Savage."

MONUMENTS IN CHURCHES.—In the House of Commons recently, Sir E. Lees (Birkenhead) asked the Secretary to the Board of Education whether the Department of Science and Art, with a view to maintaining an historical record of the phases of British monumental art, would consider the desirability of re-erecting, and preserving at South Kensington, such national monuments, erected in churches, out of public money, and in pursuance of a vote by Parliament, as might now or hereafter be removed from those churches by the ecclesiastical authorities in charge thereof.—Sir W. Anson (Oxford University): Unless a monument is of interest in the history of art generally, or in the development of monumental art, the Art Museum at South Kensington would not seem to be an appropriate place for it. Certainly the Board would not be willing that the Art Museum should become a repository for outcast monuments which ecclesiastical authorities may, for one reason or another, have decided to displace.

HAWICK ARCHÆOLOGICAL SOCIETY.—At a recent meeting of the Hawick Archæological Society Mr. J. J. Vernon read a letter from Dr. Christison, Edinburgh, secretary of the Society of Antiquaries of Scotland, in which he stated:—"Sir Herbert Maxwell has requested me to send

you some account of the progress of the excavations at Newstead. The undertaking is the most serious we have had to do with, as the area is three times larger than that of any Roman station previously excavated by us, and it will take several years to complete the work in the thorough manner it deserves. The mere fact of its great size indicates that this station or town has been a place of unusual importance in the Roman occupation of Scotland. As yet our work has been partly exploratory by running trenches across to give us a general idea of what is before us, and partly detailed. The general indications are that the whole interior has been occupied by stone buildings, and that, although in many places they have been entirely removed, their position can always be ascertained from the foundations of clay and cobbles on which they are laid, so that we expect to get a complete plan of the place. As to the detailed work, we have made one section through the fortifications, which prove to have been of great strength, the earthen ramparts having been of unusual width, with a strong revêtement of stone. The supposed prætorium is now being cleared out, and the bases of a stone colonnade will stand to a height of several feet in the courtyard. A buttressed building and another square structure with an apse projecting into its courtyard were partially cleared. One of the most interesting indications met with both in the fortifications and buildings is that there were two occupations, both Roman. The number of relics found is very considerable, and include a novelty—a Roman stylus. They are to be seen in the museum here. The excavations are under the charge of Mr. James Curle, Priorwood, Melrose. . . ."

TEMPERATURE AND INSULATION MATERIALS.—A voluminous report by the Engineering Standards Committee deals very fully with various long series of experiments undertaken at the National Physical Laboratory and elsewhere for the purpose of obtaining reliable data upon which to base recommendations relative to the permissible temperature rise for electrical machinery. From the report by Mr. E. H. Rayner of the tests conducted at Teddington, we notice that various insulation materials were heated for several weeks in electrical ovens at temperatures ranging from 75 deg. to 150 deg. centigrade, and the alternating current required to pierce these materials was determined both for heated and for unheated specimens. The table on pp. 10 and 11 shows that varnished papers and other substances are far more damp-resisting when cold, but that when heated the untreated materials give the higher values. The subject of this report is an interesting one, but, of course, the special value of the report is represented by its bearing upon the manufacture of electrical machinery.

LECKHAMPTON QUARRIES.—Rising to the height of nearly a 1,000 ft., Leckhampton Hill overlooks the town of Cheltenham, and its wooded heights still form a pleasant feature of the landscape. As in the cases of Clifton, Malvern, Buxton, and other towns, the presence of good building stone has tempted landowners for many years past to subordinate beauty to utility, and immense quantities of material have been removed from Leckhampton Hill within the last century. The chief stones yielded by these quarries are oolite and millstone grit, both of them identical in constitution with the rocks of the same strata found in adjoining counties. We have received from Mr. W. Graham, of Leckhampton Stoneworks, two samples of local oolite, practically the same thing as Bath stone. One specimen represents newly-quarried stone, and the other formed part of a piece of ashlar taken from old Fairfield House, Leckhampton, where it stood for over a century, and, so far as we can judge, without the least sign of disintegration. Of course, it must be remembered that air on the Cotswold Hills is remarkably pure, and similarly favourable results are not to be expected in cities and large towns. We have before us also a sample from the same quarry of the well-known millstone grit, or "Farewell Rock," so-called by miners because it denotes the limit of workable coal seams. This is a good specimen of a variety of stone familiar to our readers, and of which large quantities are still being removed from the Avon gorge at Clifton.

LONDON & INDIA AND MILLWALL DOCK COMPANIES.—In the course of next Parliamentary Session a Bill will be promoted for an amalgamation of the two dock companies with a combined capital of about 21 millions sterling—the capital value of the London & India Dock Company being calculated as 19 millions. Should the project be ratified, some new works will be carried out for reconstructing the Millwall lock-entrance at Limehouse Reach and for improving the communications between the Millwall Docks in the Isle of Dogs and the London & India Docks. In that event the docks on the north side of the river will be brought under one management. For in 1838 an amalgamation was made of the East India and West India Dock Companies. The West India Docks, the first in London and at the time the largest in the world, were constructed by William Jessop, in 1800-2, in the northern part of the Isle of Dogs, and covered 295 acres; George Gwilt the elder and his son George designed the warehouses. The Corporation of London cut the City Canal (enlarged as the south dock in 1870 by Harrison Hayter) to communicate between the reaches at Limehouse and Blackwall; other improvements were carried out by Sir J. Hawkshaw and, in 1894 (the Blackwall lock), by Mr. Robert Carr and Mr. H. F. Donaldson. The Honourable East India Company built their docks at Blackwall, having a water-area of 32 acres, in 1805-6, Rennie and Ralph Walker being the joint engineers. The London Docks, having 35 acres of water-area, were built for the tobacco, spirit, and wine trades, from John Rennie's plans, and opened on January 30, 1805, the warehouses being designed by D. A. Alexander and W. H. Ashpitel, who together made a survey of the ground; the lock-entrance at Shadwell, close to Wapping Old Stairs, 1831, is by H. R. Palmer; the tea warehouses were added fourteen years afterwards; the entire works cost 4 millions, and cover 90 acres of land. In 1864 the London Dock Company combined with the St. Katharine Dock and Victoria Dock Companies (1855). For the St. Katharine Docks, planned by Telford and constructed by P. Hardwick, R.A., in 1826-8 were cleared away the Flemish burial-ground, Hanson's (or Hangman's) Gains, 1,250 houses and tenements, and the church and hospital of St. Katharine-by-the-Tower, founded in 1148 by Queen Matilda. The hospital church and the brethren's lodgings stood near the lock-entrance, just below Tower Bridge. The excavated soil was carried up the river for filling in the cuts and reservoirs of the Chelsea Waterworks Company for the building by Cubitt of that portion of Pimlico. Then, in 1880, the London & St. Katharine Docks Company opened the Royal Albert Dock, since enlarged (1885-6) from designs by Colonel Martindale, R.E., and the company's engineers, Messrs. Carr & Thomas; and, two or three years subsequently, the East & West India Docks Company built their docks at Tilbury. In pursuance of the Working Union Act, 1888, the docks of the London & St. Katharine and the East & West India Companies passed to the control of the London & India Docks Joint Committee, who were dissolved by an Act which came into force on January 1, 1901, when the several undertakings we mention were united and taken over by the present London & India Docks Company. The Millwall Docks, opened in 1868, were built by Sir John Fowler.

UNION JACK CLUB-HOUSE.—The first ordinary meeting of the members of the Union Jack Club was held a few days ago, under the presidency of Colonel Sir Edward Ward. The club-house in Waterloo-road is now in course of being erected, after Mr. H. B. Measure's plans and designs, for 350 bedrooms, which, as far as possible, will be dedicated to the memory of particular individuals, warships, and regiments; already 175 bedrooms are thus named and provided for, including some established and equipped by the King and members of the Royal Family. Whilst forming a resort for our sailors and soldiers when away from duty, or travelling to and from their quarters, the club will constitute a national memorial to those who have fallen in their country's service. The site of the club premises has been obtained at a cost of 29,729*l*. The funds in hand amount to nearly 45,000*l*., but more than 40,000*l*. is still needed to defray current expenditure and to set the institution upon a sound basis, free from liabilities.

SPURGEON MEMORIAL.—At a sitting of the Baptist World Congress at Exeter Hall a statue of the late Mr. C. H. Spurgeon was unveiled. By reason of a slight leakage of metal that happened during the process of casting, the statue at present consists of a model executed by Mr. Derwent Wood. When completed the bronze statue will be placed in a niche of the Baptist Church-house, Southampton-row, W.C.

BUSTS, BOROUGH POLYTECHNIC.—Busts of Michael Faraday and Joseph Lancaster, carved in marble by Mr. H. C. Fehr, have been set up in the vestibule of the Borough Polytechnic. Faraday was born and passed his childhood in Gilbert-street, in the vicinity, and Lancaster established his school on the site in Borough-road whereon the Polytechnic now stands.

SOCIETY OF ARTS.—At their last meeting the Council elected Sir Owen Roberts as Chairman of the Council in succession to Sir William Abney, F.R.S. The Council have awarded their medal to Mr. T. Graham Jackson, R.A., for his lectures upon "Street Architecture," delivered in December—May last to the Architectural Section of the Society, and their Albert Medal for 1904 to Mr. Walter Crane "in recognition of the services he has rendered to art and industry by awakening popular interest in decorative art and craftsmanship and by promoting the recognition of English art in the forms most material to the commercial prosperity of the country."

PROPOSED WORKMEN'S DWELLINGS, BODMIN.—A Local Government Board inquiry was held at Bodmin Guildhall, on the 27th ult., by Col. A. J. Hepper, R.E., D.S.O., into the application of Bodmin Town Council to borrow 3,000*l*. for the erection of workmen's dwellings. The Town Clerk said the site now proposed covered a quarter of an acre. Mr. R. T. Buscombe, the Borough Surveyor, stated that there would be eighteen houses, each of three rooms on the ground floor and three on the second floor. After some discussion the inquiry closed.

ROYAL SANITARY INSTITUTE.—At a public meeting held on the 3rd inst. at the Guildhall, Bristol, it was unanimously decided to invite the Royal Sanitary Institute to hold its annual congress at Bristol next year.

ABERDEENSHIRE QUARRYING INDUSTRY.—The depression in the local building industry which has prevailed for a considerable time back is having its effect on the quarries in Aberdeenshire. Generally speaking the results on quarrying have not, as yet, been markedly serious, but as there is no sign of a revival of the building trade in the immediate future, the depression will undoubtedly affect the quarries more or less adversely as time goes on. At one of the quarries, however, which usually does a large business in the supply of building material there is stated to be already an accumulation of stone for which there is no demand. Several of the quarries are devoted largely to the production of stone for manufacture into setts, and there the dulness in building would be felt to a comparatively small extent. Locally the sett-making industry seems to be in a fairly prosperous position, which is a most fortunate circumstance for quarry-owners in view of the slack demand for building material. Several sett-makers have come from the South and found employment at the Aberdeenshire quarries recently, and there are said to be more sett-makers employed at the local quarries at present than there have been for some time. After the system had been introduced at most of the quarries of piece-work by the drillers, the sett-makers, from whom complaints as to scarcity of material used to be common, had an abundance of work. There are one or two big building jobs yet to be finished in Aberdeen, and this will keep up the demand at the quarries which have the orders in hand for some time, but when these are completed it does not appear that the outlook will be at all bright. It is stated that at one quarry a number of men have been paid off. —*Aberdeen Free Fress.*

MULL GRANITE QUARRIES.—The Duke of Argyll's chamberlain has notified that his Grace's granite quarries in the Island of Mull, Argyllshire, from which were obtained the columns and massive work of the Albert Memorial, Hyde Park, are to let, and it is thought that a company may be formed for working them. The granite is red of various shades, and the supply of rock is said to be practically unlimited. The quarries are on the shore, and there are piers, etc., at which vessels can be loaded at all seasons.

HARBOUR IMPROVEMENT, NORTH SUNDERLAND.—In order to make the harbour at North Sunderland more convenient for the larger vessels now engaged in the herring fishing, a scheme of improvements is being carried out. The depth of water between pier head and breakwater has been increased by 2 ft., and the sides of the old pier are being straightened, and new landing berths arranged on either side. The improvements are being carried out by Mr. Davison, a local contractor, under the superintendence of Mr. J. W. Sandeman, Newcastle, Engineer to the Crewe Trustees.

THE TESTING ARRANGEMENTS OF THE BRITISH FIRE PREVENTION COMMITTEE for the month of August comprise—on Wednesday, August 16, a fire test with (1) a Kinnear Roller Shutter (erected by Messrs. A. L. Gibson & Co.); with (2) a 2¼-in. porous terra-cotta plastered partition by the National Fireproofing Company; and (3) with an armoured semi-porous brick floor, plastered with asbestic plaster by Messrs. Faber. On Thursday, August 17, the Committee undertakes an experimental test with a concrete floor, 5 in. thick, supported by protected broad flange girders provided by Messrs. Skelton & Co. Members of the Committee desirous of attending these tests are requested to apply to the General Hon. Secretary not later than Monday, August 14, for cards, of which a limited number will be allotted in rotation of application. The tests in September will comprise—a fire test with (*a*) Terra-wode protective coverings to stanchions constructed by Messrs. Jabez Thompson, of Northwich; (*b*) with a ceiling protecting an ordinary floor constructed by Messrs. Cullum & Co.; and (*c*) an armoured concrete floor on the Coignet system constructed by Workman & Co. There will also be an experimental investigation by the Committee with floor bays constructed of seven different aggregates of concrete, the cement being provided by the Associated Portland Cement Manufacturers, Limited. The autumn tests will include a floor with girder coverings by the New Expanded Metal Company and a number of partition tests. The reports to be issued in the course of August and September in respect to tests already completed are the following:—Two reports on tests with wire glass by Messrs. Pilkington Brothers, Limited, a report on the National Fireproofing Company's

6 ft. and 7 ft. 8 in. span flooring (protected on the underside by special plastering), and a report on two composite doors (one solid and one panelled) constructed by the Gilmour Door Company, of Trenton, Canada.

Legal.

BUILDER'S OBJECTION TO ARCHITECT AS ARBITRATOR.

THE case of Roberts and another *v.* Stythe came before the Court of Appeal, consisting of Lords Justices Romer and Mathew, on the 3rd inst., on the plaintiffs' appeal from an order of Mr. Justice Bucknill in Chambers, affirming an order of the Master, and referring the action to arbitration. The plaintiffs are a firm of builders carrying on business at Llandudno, and they brought the action against the defendant, Mr. R. R. Stythe, of Carnarvon, to recover 416*l.* under a building contract.

Mr. F. Marshall, K.C., and Mr. Ellis Griffiths, appeared in support of the appeal, and Mr. Ralph Bankes for the respondent.

Mr. Marshall said that Mr. Justice Bucknill had stayed all proceedings in the action and referred the matters in dispute to the architect named in the contract, Mr. R. L. Jones. The circumstances giving rise to the claim were as follows. The plaintiffs undertook by contract in the early part of last year to erect a house for the defendant at Carnarvon. Things went on satisfactorily until December last year. On December 2 the plaintiffs, wanting further payments of money from defendant, spoke to the architect about the matter, and told him that their bankers were ready to made advances to them provided the architect would give a statement as nearly as he could as to the amount that would be due to them at the termination of the contract. The architect agreed to do that, and wrote a letter in which he said: "I think you will be entitled to 250*l.* or 300*l.* for extras. Without prejudice." The contract was for 1,400*l.*, and there had been paid on account 1,120*l.*, leaving a balance of 280*l.* due on the contract. Then the architect estimated that there would be deductions to the amount of about 50*l.*, and on the other hand there would be extras, so that the total amount payable to the builders would be about 250*l.* or 300*l.* Upon the faith of that letter the builders obtained an advance of 250*l.* from their bankers. At that time the work was practically finished. In the early part of January the builders sent in their claim for extras amounting to 176*l.*, showing, after taking off the deduction estimated by the architect, a balance of 416*l.* in the builders' favour, which was the amount claimed in the present action. The plaintiffs sent in their claim on March 9, and on the same day the defendant sent in a long and formidable list of deductions to the architect. These deductions amounted to 300*l.* The architect sent them on to the builders, stating that he proposed to make them, and inviting criticisms by the builders. Eventually the architect made a final certificate showing that all that was due to the plaintiff was 36*l.* over the contract price of 1,400*l.* The deductions which the architect made amounted to about 294*l.*, and the ground of the deductions were that certain of the work was alleged not to be in accordance with the specification.

Lord Justice Romer: You do not say that the architect has not done his best?

Mr. Marshall: We say from the evidence we have in the affidavits that the defendant threatened the architect with an action for negligence, and when he sent in his deductions the architect yielded to the threat and adopted deductions which, in his own conscience and in honesty, he could not have adopted.

Lord Justice Romer: The objections came from the building owner and passed through the architect to the builders. Do you complain that that course was taken?

Mr. Marshall: No, the building owner ought to have views in the matter. What I do complain of is that the architect, knowing he was threatened——

Lord Justice Mathew: Building owners often labour under an impression, generally ill-founded, that the architect is friendly with the builder, but I do not know that you could coerce the architect because a building owner took up a certain view. I should have thought that such a threat was more likely to set the architect's back up.

Mr. Marshall submitted that in the circumstances the architect was not a fit and proper person to decide the dispute, and that therefore the case ought not to be referred to him.

Mr. Bankes, for the respondent, submitted that the order of the learned judge was quite right. He said there was no foundation whatever for the attack that had been made upon the architect, who was a gentleman of high standing in North Wales. It was quite clear that there never was any action threatened by the defendant against the architect.

Lord Justice Romer said that, in the circumstances he thought the architect ought to be given an opportunity of making an affidavit, if he chose, in reference to the attack made upon him, and for this purpose the matter would be adjourned for a week. In the meanwhile, also, he thought it was desirable that the parties should consider the advisability of referring the dispute to an independent architect. He made no order as to this, and only threw it out as a suggestion.

The matter was adjourned accordingly.

On Thursday, the 10th inst., Mr. Eldon Bankes, K.C., said he was instructed in the case on behalf of the defendant. The learned counsel read an affidavit by Mr. Jones, in which that gentleman denied that he had ever been threatened by the defendant, and said that the first he had heard of the alleged threatened action was from the newspaper reports of the proceedings last week. He added that the deductions which he made were made from his own judgment, and quite independently of the defendant. He absolutely denied the allegation of collusion between himself and the defendant. The learned counsel said that Mr. Jones occupied a high position in the locality, and that this matter having gone so far it was quite impossible for him (counsel) to assent to another architect being appointed to deal with the dispute. Were he to consent to such an arrangement the impression would remain that Mr. Jones was not a fit and proper person to deal with the dispute. He submitted that there was no ground whatever for withdrawing the case from the architect, and that the appeal should be dismissed.

Mr. Marshall then proceeded to reply, and submitted that on the face of the plaintiff's affidavit it was clearly a case which ought not to be submitted to the architect.

In the result their lordships held that there was not the slightest ground for the imputations made against the architect, and dismissed the appeal with costs.

The Master of the Rolls added that he had never before seen such reckless charges made on affidavit—charges made without the slightest foundation.

DISPUTE AS TO ARCHITECT BEING ARBITRATOR.

THE case of Nye *v.* Crossley & Jay came before the Court of Appeal, composed of Lords Justices Vaughan-Williams, Stirling, and Cozens-Hardy, on the 1st and 2nd insts., on the plaintiff's appeal from a judgment of Mr. Justice Warrington in the Chancery Division.

Mr. Carson, K.C., and Mr. Beddall, appeared for the appellant; Mr. Rowden, K.C., and Mr. Mark Romer for the respondent Mr. Crossley; and Mr. Norton, K.C., and Mr. Stone for the respondent, Mr. G. M. Jay.

Mr. Carson, in opening the case, said the notice of appeal asked that so much of the judgment of Mr. Justice Warrington as declared that according to the true construction of an agreement dated April 22, 1903, the defendant, Mr. Jay, was the arbitrator to whom the matters in dispute between the plaintiff and the defendant Crossley were referred under the agreement, should be discharged, and that judgment should be given for the plaintiff as claimed in the statement of claim. The question raised by the appeal was as to who was the arbitrator under a building agreement entered into between the plaintiff and the defendant Crossley, a builder. The plaintiff was the owner of some land at Brighton, and he was minded to erect houses upon it, and employed Crossley to build them. Mr. Jay was an architect carrying on business at Brighton, and Mr. Crossley said he (Mr. Jay) was the arbitrator appointed under the agreement. Mr. Nye said that a Mr. Puttick was the arbitrator, and that Mr. Jay was not the arbitrator. A short outline of the case was as follows:—In March, 1903, the plaintiff was anxious to build these houses on his land at Brighton, and he obtained from Mr. Jay certain specifications for that purpose. On or about April 20, 1903, plaintiff agreed with Mr. Jay that he (Jay) should superintend the works. On April 22, 1903, the plaintiff and Mr. Crossley entered into the building agreement, which was in the usual form. Mr. Jay was not a party to it, but in one of the clauses there was a reference to him as the architect to prepare the plans, and in the rest of the agreement there were a number of duties attributed "to the architect." Finally, there was an arbitration clause referring disputes "to the architect." During 1903 Mr. Jay continued to act in superintending the works for the plaintiff. In December, 1903, the plaintiff rightly or wrongly came to the conclusion that Mr. Jay was not serving him properly, and dismissed him; and in January, 1904, the plaintiff appointed Mr. Puttick to be his architect and surveyor in the place of Mr. Jay. All through the year 1904 the work went on, and Mr. Puttick performed, with Mr. Crossley's assent, the duties which by the agreement of April 22, 1903, were assigned to the architect—the giving of certificates and so on. Then in November, 1904, the work being finished, or practically so, there came the question of the amount to be paid to the builder for doing the work, and that had to be settled by arbitration. The question then was, who was to be the arbitrator? The plaintiff said Mr. Puttick; Mr. Crossley said Mr. Jay; and thereupon the present action was started. The statement of claim asked three forms of relief—(1) A declaration that Mr. Jay was not the arbitrator; (2) that if he was the arbitrator the plaintiff should be at liberty to revoke the submission; and (3) a declaration that Mr. Puttick was the arbitrator. On behalf of the plaintiff, he (Counsel) might say that of all the three reliefs claimed the most important was the negative one that Mr. Jay was not the arbitrator. The plaintiff looked upon Mr. Jay as a dismissed servant. He was willing to accept an independent person appointed by the parties, or by the Court, as arbitrator.

Lord Justice Vaughan-Williams: What does Mr. Rowden say to that?

Mr. Rowden replied that he could not agree to that.

Lord Justice Vaughan-Williams said that *prima facie* there seemed to be a reason why Mr. Jay should not be the arbitrator. He thought that in the circumstances it would be better for him not to act as the arbitrator. It might be that Mr. Jay had been perfectly right all through.

Mr. Rowden said there was no evidence of the unfitness of Mr. Jay to act as arbitrator.

Lord Justice Vaughan-Williams: I do not say there is. He does not deny that he was dismissed, and that since his dismissal Mr. Puttick has been acting as architect. It seems to me that, under those circumstances, if we have any discretion in the matter at all, the last thing for us to do would be to appoint Mr. Jay to act as arbitrator.

Mr. Rowden: My submission is that Mr. Jay, by the contract, is the person to give his decision, and there is no evidence of unfitness on his part. I submit there is no reason why we should not have the person to whom we bound ourselves.

Lord Justice Vaughan-Williams could not see that Mr. Jay had any rights in the matter.

Mr. Norton said that that had always been his submission on behalf of Mr. Jay. Mr. Jay did not care which way it was. Mr. Crossley said that Mr. Jay was the arbitrator, and the plaintiff said he was not. Mr. Jay was perfectly willing to do what the Court said he ought to do. Mr. Jay could never understand why he had been brought there.

Mr. Carson said that as against Mr. Jay his case was that he had given a notice of arbitration, which notice he had never withdrawn.

Lord Justice Cozens-Hardy: Do you contend that you can remove him if he is the arbitrator appointed?

Mr. Carson: No, I do not; but I ask for leave to revoke. I say that on the construction of the document he is not the arbitrator, and, further, if he is, that there are grounds on which the Court will give me leave to revoke the submission. I do not suggest corruption against Mr. Jay. I say I have the right to revoke the submission on the ground that in the circumstances there must be friction.

Lord Justice Vaughan-Williams, at the conclusion of the learned counsel's address on the construction point, said it would be convenient if the Court heard Mr. Rowden on the question of the construction of the agreement before any further argument from Mr. Carson was heard.

Mr. Rowden contended that the decision of the learned Judge was quite right. His learned friend, Mr. Carson, had been really arguing that the building owner had the right to choose his own judge.

Lord Justice Vaughan-Williams: I suggest to you that, according to the reasonable construction of this contract, the arbitrator means "the architect for the time being."

Mr. Rowden replied that the words "for the time being" were not to be found in the contract. The learned counsel said he was informed by Mr. Romer, who was present in the Court below, that an offer was made by the plaintiff to go to an independent person as arbitrator. Their answer to that was that they had been brought into Court to resist Mr. Puttick holding the arbitration, and they were willing to go to an independent person on the terms of their costs being paid.

After some further argument, Lord Justice Vaughan-Williams said they did not want to waste the time of the Court by discussing questions the solution of which seemed so very unlikely to be any good to anybody. Here they started with the assumption that both the parties, subject to the question of terms, were willing to have an independent architect or gentleman to act as arbitrator to judge of the question which had arisen. As then advised, he thought in these circumstances that Mr. Justice Warrington's order should be varied to meet that suggestion; that Mr. Justice Warrington's order as to the costs in the Court below should not be disturbed; that, so far as the appeal was concerned, it should be dismissed without costs as between Mr. Nye and Mr. Crossley, and that Mr. Jay's costs should be paid by the person who had brought him there unnecessarily.

Mr. Rowden said he would accept those terms on behalf of his client.

Mr. Carson, on behalf of Mr. Nye, also agreed to the proposals of the Lord Justice as between his

client and Mr. Crossley. He objected, however, to paying Mr. Jay's costs. Mr. Jay had given notice of the arbitration, and had refused to withdraw it. Mr. Jay asserted after the writ was issued that it seemed to him he must be the arbitrator. He submitted that Mr. Jay was properly made a party to the action.

Lord Justice Vaughan-Williams said Mr. Jay had been improperly joined as a party by the plaintiff, and plaintiff must pay the costs of Mr. Jay both in the Court below and on the appeal.

Mr. Carson said it had been arranged that if the parties could not mutually agree on an arbitrator, the arbitrator should be left to the nomination of the Registrar of the Brighton County Court.

CASE UNDER THE LONDON BUILDING ACT.

THE case of the London County Council *v.* Collins came before a Divisional Court of King's Bench, consisting of the Lord Chief Justice and Justices Lawrance and Ridley, on the 7th inst., on an appeal by the London County Council from the decision of the magistrate on an information under the London Building Act, 1894.

Mr. Horace Avory, K.C., and Mr. Daldy appeared for the appellants, and Mr. Danckwerts, K.C., and Mr. Cunningham Glen for the respondent.

Mr. Avory said that the short question to be decided was whether a person had commenced to form a street in breach of conditions under which consent was given for its formation. The condition was that the respondent should not build on either side of the street until he had thrown it open from end to end as a public highway. The road in question was situate at Hammersmith. The magistrate found that the respondent had granted a lease of part of the land—a triangular piece at the back and some 119 ft. from the roadway—for the purposes of a factory, and the building had been erected. The person who had the factory had certain rights over the road. In addition to this fact, the road had eventually to run over a railway, but the bridge had not yet been built. Under these circumstances, the magistrate found that the respondent had not yet commenced to lay out or form a new street, and he dismissed the information. The learned counsel said the point of decision was whether the building in question was upon the side of the proposed new street or upon a site abutting upon a new street. He submitted that the learned magistrate was wrong in his finding, he taking too narrow a view of the meaning of the words of the condition.

Mr. Danckwerts argued that the condition only became operative if and when the respondent laid out the new street. If the respondent never laid out a new street or road, then the condition did not become operative.

The Lord Chief Justice, in giving judgment, said he had come to the conclusion that the decision of the magistrate in this case was right. But he was not quite sure that he agreed with the way it had been put. The ground of his decision was that the magistrate did not find that the respondent had laid out or commenced to lay out a new street. As to the factory abutting on the street, he expressed no opinion. That was a question that would have to be considered when all the circumstances were reviewed. He thought the learned magistrate was right in his findings, and that the appeal ought to be dismissed.

Justices Lawrance and Ridley concurred.

THE WIDENING OF PICCADILLY: ACTION AGAINST THE WESTMINSTER CORPORATION.

MR. JUSTICE SWINFEN EADY, in the Chancery Division, on the 8th inst., delivered a considered judgment in the case of Pescod *v.* The Mayor, etc., of Westminster, an action by the plaintiff to restrain the defendants from proceeding with a notice to treat which they had given under the provisions of Michael Angelo Taylor's Act, under which the defendants claimed the right to acquire compulsorily the interest of the plaintiff in No. 30, Piccadilly. The case was reported in last week's issue of the *Builder*. The material facts of the case sufficiently appear from the following judgment:—

Mr. Justice Swinfen Eady said the plaintiff was the lessee for a term of which about two years and a half were unexpired of the basement, ground floor, and entresol of a house, No. 30, Piccadilly, where he carried on the business of a tailor. The plaintiff had sub-let part of the basement and ground floors to a tobacconist for the residue of the term with a nominal exception. The defendants claimed to take the plaintiff's premises under Michael Angelo Taylor's Act for the purposes of widening Piccadilly, and duly served a notice to treat dated in June, 1905. The plaintiff alleged that the adjudication made by the defendants, that the whole of the house No. 30 would be necessary for that purpose, was wrong and *ultra vires*, and he claimed an injunction to restrain the defendants from proceeding under their notice to treat. The plaintiff alleged that defendants required only part of the house for street widening—namely, a strip extending backwards from the Piccadilly front for about 22 ft. 6 in.—and that he was willing to sell that part and could not be required to sell the whole. He also alleged that the adjudication of the defendants that it was necessary to take the whole house was not made *bonâ fide*, the defendants having agreed to sell to a hotel company the portion not actually required for street widening. On the hearing of the plaintiff's interlocutory motion, it was objected that the plaintiff in any case had a right of pre-emption under section 96 of the Act, and this was conceded by the defendants, who explained why the point was not further raised at the trial. The defendants insisted at the trial that for the purpose of the street widening it was necessary to take the whole house. The plaintiff's premises consisted (1) on the ground floor of two shops having a total frontage to Piccadilly of 18 ft. and a total depth of 64 ft., the width of the back being 25 ft. for a depth of about 32 ft.; (2) the basement beneath the whole of the ground floor; and (3) a large room of about 650 ft. superficial area at the back of the premises on the entresol floor, the nearest side of such room to the street being 26 ft. therefrom. The plaintiff had no interest in the front portion of the entresol floor, nor in the first, second, third, and fourth floors of the house fronting Piccadilly except in respect of a claim to flues and a cistern of water. Fronting Piccadilly there were four floors above the entresol with a separate entrance, part of the same house, although numbered separately, and all the upper floor extended not only over the two shops of the plaintiff, but over the separate entrance adjoining, the total width of the entire building on the Piccadilly front being about 25 ft. At the extreme rear the premises did not rise above the entresol floor, which was lighted by two skylights as well as by windows. This back addition extended about 24 ft. or 25 ft. to the rear of the main building. The plaintiff contended that it was physically possible to pull down and remove so much of the entire building as lay to the south of a line shown in red ink on the plans, and which was 22 ft. 6 in. back from Piccadilly. That was the new building line of Piccadilly. The plaintiff contended that so much of the building as was north of that line must be left standing—at all events, that portion in which he was interested, and that care must be taken in pulling down the front portion, so as to support properly the back portion left standing. The conclusions of fact that his lordship had come to were that it would be physically possible to pull down the front portion and leave the rear portion standing, but that the cost of so doing would be very excessive; that it could not be done without entering upon every floor of the rear portion remaining standing and placing struts and ties to uphold it when the front part had been removed, and also entering upon the adjoining land each side and placing raking shores there to afford the rear portion external support; and that the opinion of Mr. Stenning was well founded that when this had been done the District Surveyor would come in and condemn the back portion as a dangerous structure. It was also put in evidence that the plaintiff had another action pending against the Piccadilly Hotel Company, Ltd., who, he alleged, had acquired the leasehold interest in the whole house subject to his own underlease of a part, and the plaintiff in that action claimed an injunction to restrain any interference with the upper portion of the premises No. 30, so as to interfere with his chimneys and flues, water tanks, and supply pipes. Continuing, his lordship said that in his opinion the plaintiff had not any absolute right to restrain the defendants from taking more land than was intended to be actually dedicated to the public; and, again, section 96 of the Act enabled the local authority to resell lands purchased by them after they had first been offered for sale to the persons from whom they were purchased. In all the circumstances, he was of opinion that the defendants could not stop short of taking the whole premises. It was clear that the portion of the building which it was necessary to be removed to lay out the site of it into the street was so indissolubly linked with the whole fabric of the house that it could not be removed without practically destroying the identity of the house as a house. He was quite satisfied that the real purpose of the defendants, the purpose for which their compulsory powers were being used—honestly and *bonâ fide*—was to acquire the whole building for the purposes alone of street widening. The result was that the action failed and must be dismissed with costs.

POINT UNDER METROPOLIS LOCAL MANAGEMENT ACT.

THE case of Bridgett *v.* The Mayor, etc., of Wandsworth came before a Divisional Court of King's Bench, consisting of the Lord Chief Justice and Justices Lawrance and Ridley, last week, on an appeal from an order of the stipendiary sitting at the South-Western Police Court, under the Metropolis Local Management Act.

Mr. Macmorran, K.C., for the appellant, stated that the point in dispute arose on the construction of Section 77 of the Metropolis Local Management Act, 1862. The facts were, shortly, these:—There was a street call Briar-walk, Putney, which was a street at right angles to another called Woodborough-road. Briar-walk had been made up as a new street, but in making up that street, and in charging the frontages for it, the Council had included the expenses of a new crossing which, it was said, was now part of the road. The learned counsel's submission was that the Council ought not to have included the costs and expenses of making that crossing in the apportionment in respect of Briar-walk, and on behalf of the frontagers he appealed from that apportionment, the magistrate having upheld it.

The Lord Chief Justice, without calling upon Mr. Horace Avory, K.C., for the respondents, in giving judgment, said he was of opinion that the magistrate's decision was right, and ought to be affirmed. He thought the costs and expenses of the crossing ought to be borne by the frontagers of Briar-walk, and that the appeal should be dismissed.

Justices Lawrance and Ridley concurred.

Leave to appeal was refused.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

18,613 of 1904.—H. E. CURTIS: *Construction of Cornices, Skirting, Dados, and the like.*

The object of this invention is to provide means whereby wires and pipes may be concealed from view, but to which access may readily and rapidly be obtained at any point, without any damage being inflicted on the surrounding parts, and with very little expense. According to the invention there is arranged a casing or tube of thin steel or other suitable material, so as to form part of the whole of such features as cornices, dados, skirtings, and the like, and which casing can be adapted to suit any shape or desired moulding, so as to participate in the general design thereof. In this casing the wires or pipes are run to any desired part of the room or building, and provide special angles and intersections in one or more pieces to facilitate turning corners, bends, etc. For the further protection of electric or other wires, guards or rounded shoulder pieces of vulcanite or other non-conducting material may be used, with a hollow or suitable section, and placed inside the casing so as to form a bed or groove for the wires to rest in and turn the angle or corner without friction or injury. The said casing may be constructed in sections fitted to the cornices, dados, and skirtings, by means of suitable screws or suitably shaped lugs, dowels, or other fastenings adapted to the particular circumstances of the case. Thus if any part of a wire or pipe requires to be inspected, part or all of the casing can be quickly detached by removing the screws or fastenings, and when desired the casing may be as readily replaced without difficulty or unnecessary destruction of adjacent fittings.

18,783 of 1904.—W. BELL: *Urinals.*

This invention consists in the formation of a special drip dish or tray to catch the drippings, the same being fixed upon the floor and having a projecting lip, and the use of this dish in combination with a urinal. In some cases this drip dish may be used with circular-backed urinals. The special arrangement and formation of the drip dish renders it applicable to other forms of urinal, and the fact that it is manufactured in glazed ware renders it exceedingly cleanly in use.

19,439 of 1904.—T. HOLCROFT & SONS, LTD., and A. H. MOULD: *Standards for Water-closet Seats, and other purposes.*

This invention relates to a standard for water-closet seat or other purposes, consisting of separately-formed lower and upper members, of which the upper is adjustably carried from the lower by means of studs fixed to one of the members, and passing through holes which have sufficient plate therein to allow the upper member to be tilted in relation to the lower one, and nuts screwed upon such studs by means of which the height of the upper member above the lower may be adjusted, and the upper member tilted in relation to the lower member to bring its top to a level, notwithstanding unevenness of the floor upon which the standard rests.

19,577 of 1904.—W. L. HAMILTON: *Fittings for Windows, and the like.*

This invention relates to a fitting consisting of a slipper, to which the sash-cord is attached, and a face-plate fixed to the sash with means for coupling the slipper to the face-plate, in combination with a hand operated locking bolt, with means acting in conjunction with the bolt to lock the slipper to the face-plate when the sash is in its sliding condition, and to unlock the

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

slipper from the face-plate while securing it to the window-frame when releasing the sash to be swung inwards.

19,816 of 1904.—J. SCOTT: *Construction of Ventilator Inlet or "Grating" for Fitting in Walls, Partitions, and the like.*

This invention consists of a tubular casing fitted with a slide having radial vanes connected together and rounded centrally, the slide having a disc or other shape closing head, the corners forced between the back of said closing head, and the vanes being filled in for deflecting the incoming air, the slide being also fitted with a fixed ring with half-loops, which on turning the slide will coincide with stops in the casing for complete withdrawal of the slide when required.

20,032 of 1904.—W. ROSS and T. ROSS: *Ball-cocks for Valves for the Supply of Water to Flushing Cisterns for Water-closets, Urinals, and the like.*

The essential feature of this invention is the fixing of the nose or outlet to the ball-cock of a nozzle piece with a fine gauze diaphragm, to form a solid jet of water. Further, the plunger or valve which is actuated by the lever and ball float is fitted with a cup of leather or other suitable packing, to prevent air having access to the water before discharge, which is thus rendered noiseless.

20,043 of 1904.—C. BOLLE: *Stone-breaking Machines.*

The construction or arrangement of stone-breaking machines with two breaking jaws arranged at an acute angle to each other, and supported upon rollers adapted to roll on inclined surfaces fixed to the frames, which jaws receive simultaneous reciprocating motion, the formation of the jaws with teeth, the ridges of which are vertical in the upper and inclined in the lower part of one or of both of the jaws.

1,414 of 1905.—A. C. H. WINTERFLOOD: *Automatic Valves for Water Heaters, and the like.*

In automatic gas valve apparatus for water heaters, and the like, arranging the water and gas valves in separate casings, and affixing between such casings a rocking lever or levers so positioned that the movement of the water valve spindle, after first opening the water supply, will act upon such rocking lever or levers, and move it to act on the spindle of the gas valve to open the gas supply.

2,373 of 1905.—G. DAUCHER: *Joiners' and like Clamps.*

This invention relates to a lever clamp, comprising a base, a flat bar rigidly secured in the said base at right angles thereto, a clamping member sliding on the said flat bar, and provided with a tubular guide, in which slides a pressure bolt, and a cam lever fulcrummed in the forked top end of the said guide, the cam portion being so shaped that the surface which contacts with said pressure bolt is divided into surfaces of unequal distance from the fulcrum.

3,513 of 1905.—H. EAGON and M. N. BROWN: *Combined Window Screen and Weather Strip.*

This invention relates to a combined window screen and weather strip, consisting of a flexible screen adapted to be wound and unwound about a spring roller, an attaching strip having a rounded upper corner for attaching the outer end of said screen to the bottom of the lower cross-piece of the window sash, a laterally curved spring metal protecting casing and anti-rattler secured at its lower edge to the outside window sill, and formed on the upper edge with a bead adapted to bear against the outer side of the lower cross-piece of the sash, and a downwardly curved cap strip secured to the lower cross-piece of said sash for ensuring a tight closure.

24,451 of 1904.—A. J. BOULT (HULSBERG & Co.): *Impregnation of Wood and other Porous Materials.*

The nature of the invention consists in that in the individual cells of the material to be impregnated there is so much air or gas, that during the impregnation the air contained therein is compressed, and after the impregnation again expands, and after partly or wholly pressing the impregnating material outwardly, escapes itself. The material or substances to be impregnated are brought under atmospheric pressure into a chamber, and are then exposed to the influence of the liquid having a pressure of one, two, or three atmospheres. The surplus of the impregnating liquid is thereupon allowed to run off, and the impregnating apparatus is put under vacuum, the result being that a large part of the impregnating liquid which has penetrated into the pores and cavities during the process of impregnation, is expelled by the expansion of the air contained in the cells and compressed during the process of impregnation.

2,026 of 1905.—G. L. MOUCHEL: *Concrete Piles.*

This invention relates to concrete piles, and has for its object to provide a pile which will give great resistance and stability when driven, and which will be capable of sustaining heavy loads without failure. The pile is tapered in its length, and may be provided with a flange or flanges at any desired positions on its surface. It may be solid, hollow, or cellular, and if hollow it may be with or without internal flanges or diaphragms, and may be circular or polygonal in cross-section as desired. The piles are strengthened by metal bars strutted and tied together, or by steel of any sections or section embedded in the concrete.

2,467 of 1905.—G. B. BROWN: *Manufacture of Mortar, Cement, Building Composition, and the like.*

This invention relates to the manufacture of plaster and of articles made therefrom, consisting of dry slaked poor lime, such as Lias lime, anhydrous plaster of Paris, and finely-ground chalk, or other alkaline earth carbonate, magnesian compounds, colouring matters, and with or without admixtures with inactive or neutral material, such as sand, sawdust, or the like, the whole being made ready for immediate use on being mixed with water.

4,503 of 1905.—D. H. and J. KAY: *Purifying the Air in Weaving Sheds, Spinning-rooms, and the like.*

This invention relates to an air filtering apparatus for use in weaving sheds, spinning-rooms, and the like, consisting of a compartment with an aperture for the free inlet of air from the outside of the building or structure and an enclosure within said compartment, whose sides are arranged so as to form corrugations, similar to the bellows of a photographic camera, and a flat or corrugated top, all covered with filtering material through which the air is caused to be drawn by a fan, and passed though a tube to the humidifyer.

6,059 of 1905.—A. VON WIELEMANS: *Ceilings.*

This invention relates to the construction of ceilings, in which the base between the ceiling supports are filled by coffers arranged in series, and composed of separate elements, characterised by the fact that these coffers are constituted as sunk panels adapted to act as supports.

10,066 of 1905.—W. PATRICK: *Field and other Gates.*

This invention relates to a device for preventing sagging in field and other gates, consisting of a bracket having a horizontal socket hole for the stem of the hinge socket, a hinge socket piece provided with a stem fitting said socket hole of said bracket, and a washer or washers of different thickness fitting over the stem of said hinge socket piece.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

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SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 25.—By COOK & BIRMINGHAM (at Tiverton).

Witheridge, Devon.—"Henciford Estate," 235 a., f.	£2,000

July 26.—By STOOKE & SON (at Hereford).

Kinnersley, etc., Hereford.—"The Newton Estate," 614 a. 3 r. 6 p., f.	21,000

July 27.—By ROBERT NEWMAN (at Uxbridge).

Uxbridge, Middlesex.—68, 69, and 70, St. Andrew's, c., y.r. 105*l.*	2,050
Pinner Common, Middlesex.—Nine freehold cottages, w.r. 104*l.*	1,530

By H. J. BURT (at Brighton).

Henfield, Sussex.—"Wantley Farm," 226 a. 0 r. 13 p., f.	5,850
Part of "Blunden's Farm," 7 a. 2 r. 5 p., f.	150
Part of "Buckwish Farm," 5 a. 1 r. 29 p., c.	190
Various enclosures, 13 a. 1 r. 14 p., f. and c.	735

By HENRY MORTEN (at Uxbridge).

Ruislip, Middlesex.—Main-rd., copyhold farm-house and 14 a. 1 r. 0 p., p.	2,750
Cottage and land, 1 a. 0 r. 6 p., f. and c.	500

July 28.—By DYER, SON, & HILTON (at Lewisham).

Lewisham.—39, Thurston-rd., u.t. 58 yrs., g.r. 2*l.* 10s., y.r. 28*l.* 12s.	230
Greenwich.—31, 33, and 35, Dutton-st., u.t. 15 yrs., g.r. 5*l.* 5s., w.r. 66*l.* 6s.	£260
21, Bridge-st., u.t. 31 yrs., g.r. 4*l.* 10s., w.r. 29*l.* 18s.	155

By ROBERTS, SON, & TORY (at Yeovil).

Yeovil, Somerset.—Ilchester-rd., enclosure of land, with slaughter-house, stabling, etc., 3 a. 3 r. 14 p., f.	800
45, Hendford-hill, and two building sites, f.	1,225
Brickyard-la., building land, 5 a. 3 r. 8 p., f.	1,190

By EDMUND BECK & SONS (at Downham Market).

Downham, Norfolk.—"Crow Hall Estate," 139 a. 2 r. 20 p., f. (in lots)	6,905

By A. J. BURROWS (at Sittingbourne).

Bredgar, etc., Kent.—"The Wedgwood Estate," 786 a. 3 r. 1 p., f. (in lots)	8,830

By RUSHWORTH & STEVENS (at Redditch).

Redditch, Worcester.—79 to 89 (odd), Evesham-rd., f.	660
203, Evesham-rd., f.	370
Headless Cross, a freehold plot of land	120
Evesham-rd., two cottages and ½ an acre, f.	420
8 and 10, Ipsley-st., f.	460
Beoley-rd., etc., three freehold plots	107
Green-la., three cottages and 1 acre	355
Green-la., cottage, smithy, and ¾ of an acre, f.	280
Green-la., cottage and enclosure, 4 acres, f.	515

July 29.—By FRANKLIN & JONES (at Oxford).

Eynsham, Oxon.—"The Home Farm," 139 a. 1 r. 32 p., f. and c., y.r. 218*l.*	4,400

July 31.—By BEARD & SON.

Bayswater.—8, Ledbury-rd., f., e.r. 80*l.*	1,100
Paddington.—40, Woodfield-pl., u.t. 54½ yrs., g.r. 5*l.*, w.r. 44*l.* 4s.	290

By ELLIOTT, SON, & BOYTON.

Oxford-street.—23, Castle-st. East (s.), u.t. 50½ yrs., g.r. 20*l.*, y.r. 150*l.*	1,700

By FIELD & SONS.

Kennington.—73, St. Agnes-pl., u.t. 60¾ yrs., g.r. 8*l.*, e.r. 38*l.*	300
Peckham.—16, 18, 20, and 22, Wivenhoe-rd., u.t. 59 yrs., g.r. 20*l.*, w.r. 148*l.* 4s.	925

By T. FRASER.

Kentish Town.—12, Alma-st., u.t. 19 yrs., g.r. 4*l.*, y.r. 30*l.*	220

By FULLER & RUDDOCK.

Shepherd's Bush.—18, Brooklyn-rd., u.t. 61 yrs., g.r. 10*l.*, e.r. 55*l.*	500

By HARRODS'.

Byfleet, Surrey.—"The Vine," f., p.	1,100

By MAY & PHILPOT.

Brixton.—27, Helix-gdns., u.t. 85 yrs., g.r. 8*l.* 10s., e.r. 55*l.*	575

By STIMSON & SONS.

Merton.—Cannon-hill-la., a block of freehold land, also "Sutton's Cottages" (four), area 2 a. 3 r. 18 p.	1,200
Brixton.—60 to 63, Trinity-sq., f., y.r. 124*l.*	1,050
408, Brixton-rd., u.t. 20½ yrs., g.r. 3*l.* 3s., e.r. 65*l.*	325
Old Kent-rd.—9, 11, 13, and 15, Ruby-st., u.t. 42 yrs., g.r., 20*l.*, w.r. 166*l.* 8s.	650
Lambeth.—79 to 85 (odd), Newburn-st., u.t. 58¾ yrs., g.r. 16*l.*, w.r. 88*l.* 8*l.*	350
Peckham.—14, Gordon-rd., f., e.r. 36*l.*	440
Sydenham.—West hill, "Rocklea," u.t. 58 yrs., g.r. 14*l.*, y.r. 112*l.*	900

By F. VARLEY & SON.

Finsbury Park.—13, King's-rd., u.t. 55 yrs., g.r. 8*l.*, e.r. 55*l.*	525

August 1.—By NORRIS & HADLEY.

St. John's Wood.—56, Acacia-rd., u.t. 14¼ yrs., g.r. 14*l.*, e.r. 80*l.*	255

By NOYS & HOWES.

Caledonian-rd.—112, Copenhagan-st. (s.), u.t. 40 yrs., g.r. 9*l.*, y.r. 60*l.*	650
Streatham.—189, Streatham High-rd. (s.), u.t. 69 yrs., g.r. 24*l.*, y.r. 100*l.*	1,180

By MORRIS & SANDELL.

Islington.—Gerrard-st., f.g.r. 6*l.* 6s., reversion in 28 yrs.	215
New Cross.—2, Pepys-rd., u.t. 52 yrs., g.r. 10*l.*, y.r. 45*l.*	375
Brixton.—Tulse Hill, f.g. rents 130*l.*, reversion in 72 yrs.	3,715
53, Upper Tulse-hill, f., p.	615
Trinity-rd., f.g. rents 22*l.* 14s., reversion in 58¼ yrs.	740
Trinity-rd., "Clarendon House" and building estate adjoining, 3 a. 0 r. 30 p., f., p.	14,000
Carshalton, Surrey.—West-st., a freehold house and shop, y.r. 15*l.*	180
Carshalton Park-rd., etc., six building plots, f.	257
Mill-la., f.g. rents 10*l.* 10s., reversion in 60 yrs.	265

By G. LOVEITT & SON at Coventry).

Coventry, Warwick.—541 to 549 (odd), Foleshill-rd. (s.), f., y.r. 130*l.*	2,200
302 to 310 (even) Foleshill-rd., f.	1,185
1 and 3, Station-st. West, f.	360
3, College-sq. and messuage adjoining, f.	310
60, Clarendon-st., and 64 and 66, Arden-st., f.	485
Arden-st., two freehold plots	247

August 2.—By D. J. CHATTELL & SONS.

Chislehurst West, Kent.—High-st., four freehold s. and premises, y.r. 257*l.*	4,750
High-st., freehold shop and premises, e.r. 45*l.*	700
High-st., three s. and premises, f., y.r. 140*l.*	2,650
High-st., a freehold cottage, y.r. 22*l.* 10s.	425

By ELLIS & SON.

Cheapside.—12 and 13, Bow-la., area 3,100 ft., building lease for 10 yrs., let at per annum	850

By TRIST & CO.

Peckham.—Pitt-st., f.g.r. 101*l.* 10s., reversion in 8½ yrs.	6,050
Camden-ter., f.g.r. 40*l.*, reversion in 88 yrs.	1,050

By WRIFORD, DIXON, & CO.

Hyde Park.—33 and 36, Cambridge-st., u.t. 24¼ yrs., g.r. 24*l.*, y.r. 210*l.*	1,500
Fulham.—70, Sherbrooke-rd., u.t. 971 yrs., g.r. 3*l.* 15s., p.	350

August 3.—By J. H. BULMER.

Bermondsey.—49 and 51, Maltby-st, and 53, Stanworth-st., u.t. 7½ yrs., g.r. 7*l.* 10s., w.r. 102*l.* 14s.	£160
133 to 143 (odd), Silwood-st., u.t. 70 yrs., g.r. 27*l.*, w.r. 198*l.* 18s.	1,205
Deptford.—39 and 41, Edale-rd., u.t. 70 yrs., g.r. 9*l.* 10s., w.r. 74*l.* 2s.	450
Rotherhithe.—45, 47, and 49, Raymouth-rd., u.t. 49 yrs., g.r. 4*l.*, w.r. 105*l.* 6s.	885
2, 4, and 18, Pedworth-rd., u.t. 48½ yrs., g.r. 2*l.*, w.r. 101*l.* 8s.	880

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

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*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	8	0	per 1000	alongside,	in river.
Rough Stocks and Grizzles	1	4	0	,,	,,	,,
Facing Stocks	2	0	0	,,	,,	,,
Shippers	2	0	0	,,	,,	,,
Flettons	1	7	0	,,	at railway	depôt.
Red Wire Cuts	1	14	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	2	6	,,	,,	,,
Do. Bullnose	4	7	6	,,	,,	,,
Best Stourbridge Fire Bricks	4	0	0	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

	s.	d.	
Thames and Pit Sand	7	0	per yard, delivered.
Thames Ballast	5	9	,, ,,
Best Portland Cement	27	0	per ton, ,,
Best Ground Blue Lias Lime	20	0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,, ,,
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2	1	,, ,,
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2	2½	,, ,,

	s.	d.	
Ancaster in blocks	1	11	per ft. cube, deld. rly. depôt.
Beer ,,	1	6	,, ,,
Greenshill ,,	1	10	,, ,,
Darley Dale in blocks	2	4	,, ,,
Red Corsehill ,,	2	5	,, ,,
Closeburn Red Freestone	2	0	,, ,,
Red Mansfield ,,	2	4	,, ,,

STONE (*continued*).

YORK STONE—*Robin Hood Quality.*

	s.	d.	
Scappled random blocks	2	10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super. ,,
6 in. rubbed two sides ditto, ditto	2	6	,, ,,
3 in. sawn two sides slabs (random sizes)	0	11½	,, ,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,, ,,
1½ in. to 2 in. ditto, ditto	0	6	,, ,,
HARD YORK—			
Scappled random blocks	3	0	per ft. cube. ,,
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super. ,,
6 in. rubbed two sides ditto	3	0	,, ,,
3 in. sawn two sides (slabs random sizes)	1	2	,, ,,
2 in. self-faced random flags	0	5	,, ,,

	£	s.	d.	
Hopton Wood (Hard Bed) in blocks	2	0		per ft. cube, deld. rly. depôt.
,, ,, ,, 6 in. sawn both sides landings	2	7		per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. sawn both sides random slabs	1	0		,, ,,
,, ,, ,, 2 in. do.	0	8½		,, ,,

SLATES.

in.	in.	£	s.	d.	
20	× 10 best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20	× 12 ,, ,,	13	17	6	,, ,,
20	× 10 first quality ,,	13	0	0	,, ,,
20	× 12 ,, ,, ,,	13	15	0	,, ,,
16	× 8 ,, ,, ,,	7	5	0	,, ,,
20	× 10 best blue Portmadoc	12	12	6	,, ,,
16	× 8 ,, ,,	6	12	6	,, ,,
20	× 10 best Eureka unfading green	15	17	6	,, ,,
20	× 12 ,, ,,	18	7	6	,, ,,
18	× 10 ,, ,,	13	5	0	,, ,,
16	× 8 ,, ,,	10	5	0	,, ,,
20	× 10 permanent green	11	12	6	,, ,,
18	× 10 ,, ,,	9	12	6	,, ,,
16	× 8 ,, ,,	6	12	6	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.
Hip and Valley tiles	3	7	per doz. ,, ,,
Best Broseley tiles	50	0	per 1000 ,, ,,
Do. Ornamental tiles	52	6	,, ,, ,,
Hip and Valley tiles	4	0	per doz. ,, ,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 ,, ,,
Do. Ornamental do	60	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	0	,, ,, ,,
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000 ,, ,,
Do. Ornamental do	54	6	,, ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles	3	8	,, ,, ,,
Best "Rosemary" brand plain tiles	48	0	per 1000 ,, ,,
Best Ornamental tiles	50	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	8	,, ,, ,,
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000 ,, ,,
Do. pressed	47	6	,, ,, ,,
Do. Ornamental do	50	0	,, ,, ,,
Hip tiles	4	0	per doz. ,, ,,
Valley tiles	3	6	,, ,, ,,

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13	10	0	15	0	0
Deals: best 3 by 9	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less thn best.		
Battens: seconds	0	10	0	,, ,, ,,		
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards—						
1 in. and 1½ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		

	At per load of 50 ft. £	s.	d.	£	s.	d.
Fir timber: best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	0	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	10	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	3	15	0

JOINERS' WOOD.	At per standard. £	s.	d.	£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in	24	0	0	25	0	0
3 in. by 9 in.	22	0	0	23	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Second yellow deals, 3 in by 11 in.	18	10	0	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	12	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	14	0	0
Do. 3 in. by 9 in.	12	10	0	14	0	0
Battens	10	0	0	11	0	0

WOOD (*continued*).

JOINERS' WOOD (*continued*)— White Sea and Petersburg:	At per standard. £	s.	d.	£	s.	d.
First white deals, 3 in. by 11 in.	14	10	0	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, battens	10	0	0	11	0	0
Pitch-pine: deals	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	,,		
Seconds, regular sizes	33	0	0	,,		
Yellow Pine oddments	28	0	0	,,		
Kauri Pine—Planks, per ft. cube	0	3	6	0	5	0
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	3	0	0	3	6
Small ,, ,,	0	2	6	0	2	9
Wainscot Oak Logs, per ft. cube	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
¾ in. do. do.	0	0	7		—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	0	1	0
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	17	0	0	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	6	0	0	... 6	15	0
Compound Girders, ordinary sections	7	10	0	... 8	10	0
Steel Compound Stancheons	9	2	6	... 10	12	6
Angles, Tees and Channels, ordinary sections	7	10	0	... 8	10	0
Flitch Plates	7	15	0	... 8	5	0
Cast Iron Columns and Stanchions including ordinary patterns	6	12	6	... 7	15	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON—						
Common Bars	7	0	0	... 7	10	0
Staffordshire Crown Bars, good merchant quality	7	10	0	... 8	0	0
Staffordshire "Marked Bars"	9	10	0	...	—	
Mild Steel Bars	8	5	0	... 8	15	0
Hoop Iron, basis price	8	15	0	... 9	0	0
,, ,, Galvanized	16	10	0	...	—	
(*And upwards, according to size and gauge.)						
Sheet Iron, Black—						
Ordinary sizes to 20 g.	9	0	0	...	—	
,, ,, 24 g.	10	0	0	...	—	
,, ,, 26 g.	11	15	0	...	—	
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12	10	0	...	—	
Ordinary sizes to 22 g. and 24 g.	13	0	0	...	—	
,, ,, 26 g.	14	0	0	...	—	
Sheet Iron, Galvanised, flat, best quality—						
Ordinary sizes to 20 g.	15	10	0	...	—	
,, ,, 22 g. and 24 g.	16	0	0	...	—	
,, ,, 26 g.	17	10	0	...	—	
Galvanised Corrugated Sheets—						
Ordinary sizes 6 ft. to 8 ft. 20 g.	12	10	0	...	—	
,, ,, 22 g. and 24 g.	13	0	0	...	—	
,, ,, 26 g.	13	15	0	...	—	
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	0	0	...	—	
Best Soft Steel Sheets, 22 g. & 24 g.	12	0	0	...	—	
,, ,, ,, 26 g.	13	10	0	...	—	
Cut nails, 3 in. to 6 in.	9	0	0	... 9	10	0
(Under 3 in., usual trade extras.)						

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3 lb. and up	16	10	0	...	—	
Pipe in coils	17	0	0	...	—	
Soil pipe	19	10	0	...	—	
Compo pipe	19	10	0	...	—	
ZINC—Sheet—						
Vieille Montagne ton	29	15	0	...	—	
Silesian	29	10	0	...	—	
COPPER—						
Strong Sheet per lb.	0	0	11	...	—	
Thin ,, ,,	0	1	0	...	—	
Copper nails ,,	0	0	11	...	—	
BRASS—						
Strong Sheet ,,	0	0	10	...	—	
Thin ,, ,,	0	0	10	...	—	
TIN—English Ingots ,,	0	1	5½	...	—	
SOLDER—Plumbers' ,,	0	0	6½	...	—	
Tinmen's ,,	0	0	8	...	—	
Blowpipe ,,	0	0	9	...	—	

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.
,, fourths	1¾d.	,, ,,
21 oz. thirds	3½d.	,, ,,
,, fourths	2¾d.	,, ,,
26 oz. thirds	4½d.	,, ,,
,, fourths	3½d.	,, ,,

CONTRACTS AND PUBLIC APPOINTMENT.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Ferro-Concrete Bridge, Bournville Stream, Stirchley	King's Norton and Northfield U.D.C.	A. W. Cross, Engineer, 23, Valentine-road, King's Heath	Aug. 14
*ELECTRICITY WORKS—SUB-STATION	Finchley U.D.C.	Electrical Engineer, Electricity Works, Finchley, N.	do.
Eng. Hse., Boiler Hse., Store, etc., Bromsbarrow-heath	Malvern U.D.C.	W. O. Thorn, Surveyor to Council, Malvern	Aug. 15
Wrought-Iron Roof at Gasworks	Stourbridge U.D.C.	W. North, Engineer, Gasworks, Stourbridge	do.
School for Defective Children	Oxford Education Committee	Estates Surveyor's Office, Town Hall, Oxford	do.
Alterations to Premises, Luther-street, etc, Oxford	do.	do.	do.
Buildings for Gas Plant, Treforest	Pontypridd U.D.C.	E. Jones, Gas Offices, Treforest	do.
Sewering, Paving, etc., Streets in Broughton	Salford Corporation	Borough Engineer's Office, Town Hall, Salford	do.
Roundav & Seacroft Sewage Works (Contract No. 7)	Leeds R.D.C.	Spinks & Pilling, Engineers, 20, Park-row, Leeds	do.
Free Library, Normanton	Normanton U.D.C.	A. Hartley, Architect, County-chambers, Castleford	do.
Materials	Portsmouth Corporation	A. Hellard, Town Hall, Portsmouth	do.
Steel Flat-footed Rails and Fishplates	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, E.C.	Aug. 16
Built-up Crossings and Switches	do.	do.	do.
Portland Cement	do.	do.	do.
300 Kilowatt Set	Fulham Borough Council	A. J. Fuller, Borough Electrical Engineer, Townmead-rd., Fulham	do.
Dwelling-house and Shop, North College-street, Elgin	.....	J. Jameson, Architect, 77, High-street, Elgin	do.
Addit. to and Shelters at Glenlivet Public School	.....	C. C. Doig, Architect, Elgin	do.
Keeping 48 Public Pumps in Repair	North Dublin R.D.C.	J. O'Neill, Council Offices, North Dublin	do.
2,400 linear yds. of Invert Blocks	Great Crosby U.D.C.	Watkin Hall, Surveyor to Council, Great Crosby	do.
Cowshed, Lower Chaddlewood Fm., Plympton St. Mary	Mr. G. W. C. Soltan Symons	G. W. Soltan, 7, Courtenay-street, Plymouth	Aug. 17
Trenching & Levelling 6 Acres Ground, nr. Garmouth	.....	H. T. Spence, Secretary, Garmouth, N.B.	Aug. 18
Ipswich-road Sewer	Stowmarket U.D.C.	G. W. Lingwood, Surveyor, Station-road, Stowmarket	do.
Covering Two Tanks at Sewage Works	Rhymney U.D.C.	W. Lloyd Marks, Surveyor, 61, High-street, Rhymney	Aug. 19
Cast-Iron Pipes, Ventilating Columns, etc.	Penybont Main Sewerage Board	M. Williams, Engineer and Surveyor, Bridgend	do.
Drainage Works, Cobbler's-row, Dudley Colliery	Weetslade U.D.C.	Council Room, Dudley	Aug. 21
Nineteen Houses at Edwardsville, near Treharris	Nantddn Building Co.	J. Llewellen Smith & Davies, Architects, Aberdare	do.
Additions to Property, West Church-street, Buckie	Mr. H. W. Gunn	Mr. Gunn, Cycle Agent, Buckie	do.
Cattle Fold at Benarach	.....	P. Fulton, Architect, Forres, N.B.	do.
Hospital Addition, Thornton	Captain Penrice	S. Spencer, Arch., Old Bank-chambers, Gt. Horton, Bradford	do.
Villa at Skinburness, Silloth	Co-operative and Industrial Society	G. Armstrong, Architect, 24, Bank-street, Carlisle	do.
Stables, etc., Wellington, co. Durham	Herts C.C.	R. W. Hamilton, Secretary, at Offices	do.
*RECON. SCOTS HILL BDGE., RICKMANSW'TH	The Trustees	County Surveyor, County Surveyor's Office, Hatfield	do.
Wesleyan Schools, Queen's Ferry, Flintshire	Gorton U.D.C.	Green, Knowles, & Russell, Archs., 19, South John-st., Liverpool	Aug. 22
Private Street Works, Matthew's-lane	Gosforth U.D.C.	C. T. Singer, Clerk, Town Hall, Gorton	do.
Underground Convenience, High-street	Pengenlan Building Co., Ltd.	G. Nelson, Surveyor, Council-chambers, Gosforth	do.
Fifty-one Houses, Park-terrace, Penrhiwceiber	Sir P. C. J. Milbank, Bart.	J. Llewellen Smith & Davies, Architects, Aberdare	Aug. 23
Farmhouse, etc., at Meeting House Farm, Norton	Edinburgh School Board	J. Taylor, Architect, Exchange-chambers, Hereford	do.
Enclosing Ground at Gorgie Public School	Northwich R.D.C.	Mr. Carfrae, Architect, 3, Queen-street, Edinburgh	do.
Barnton Sewerage and Sewage Disposal Works	S. Staffordshire Water Works Co.	W. M. Beckett, Engineer, 33, Brazennose-street, Manchester	Aug. 24
Covering Service Reservoir, Shaver's End, nr. Dudley	Bradford Education Committee	H. Ashton Hill, Engineer, Paradise-street, Birmingham	do.
New Department, Hanson School, Barkerend-road	.....	Education Office, Manor-row, Bradford	Aug. 25
*CONSTRUC. 1,000 FT. ROADW., ETC., HIGHGATE	H.M. Office of Works	E. Millard, 1, Finsbury-circus, E.C.	do.
*SORTING OFFICE AT CRICKLEWOOD	Bromley R.D.C.	H.M. Office of Works, Storey's Gate, Westminster, S.W.	do.
Materials for Roads, etc.	Heysham U.D.C.	E. Haslehurst, Clerk, Park House, Bromley, Kent	Aug. 26
Council Offices, etc.	South Shields Town Council	H. Miller, Surveyor, Council Offices, Heysham	do.
*ERECT. OF CARSHEDS FOR ELEC. TRAMWAYS	Univ. Coll. of South Wales and Mon.	Borough Engineer, Chapter-row, South Shields	do.
*FOUNDS., NEW UNIV. COLL. BLDGS., CARDIFF	Commissioners of H.M. Works	W. D. Caröe, Architect, 8A, Whitehall-place, S.W.	do.
*ADMIRALTY EXTEN. BLOCK IV. (SUBSTRUC.)	Carshalton U.D.C.	Sir Aston Webb, 19, Queen Anne's-gate, S.W.	Aug. 29
Footpath Works	Chelsea Guardians	W. W. Gale, Council Offices, High-street, Carshalton	do.
*ALTERS. AND NEW STAIRCASE AT WKHSE.	Port Talbot Railway & Docks Co.	Guardians' Offices, 250, Kings'-road, Chelsea, S.W.	do.
Steam-rail Motor Coaches	Enfield U.D.C.	E. Knott, Secretary, Port Talbot	Aug. 30
Making-up Cecil-avenue, Southbury-road	Walton-on-Thames U.D.C.	R. Collins, Surveyor, Public-offices, Enfield	do.
1,200 tons of Broken Granite	Free Library Committee	R. Wilds, Surveyor, Council Offices, Walton-on-Thames	Aug. 31
Free Library, Bridgend	H.M. Office of Works	P. J. Thomas, Architect, Station-road, Bridgend	do.
*POST OFFICE AT BLACKBURN	Croydon Education Committee	H.M. Office of Works, Storey's Gate, Westminster, S.W.	Sept. 5
*ERECTION OF SCHOOL, THORNTON HEATH	N. E. Railway Co.	Education Office, Katherine-street, Croydon	Sept. 7
Steel Swing Bridge over River Hull at Sculcoates	Wallasey U.D.C. Educa. Committee	W. J. Cudworth, Engineer, York	Sept. 11
*NEW SCHOOLS	Bucks Education Committee	J. Holt, Architect, 9, Albert-square, Manchester	Sept. 16
*NEW ELEMENTARY SCHOOLS, AYLESBURY	.....	J. M. & H. Kennard, Archs., 13, Railway-approach, London Bdge.	Sept. 20
Railway Siding, 500 yds. long	Troedyrhiw Coal Co.	Manager, Cardiff District Collieries, Ltd., Bryncethin, Bridgend	No date.
Sinking a pair of Pits at Treherbert	.....	Ynysfair Colliery Office	do.
Repairs to Ashley Rectory, Newmarket	.....	J. Flatman, Newmarket	do.
Repairs to Chancel of Ashley Church	.....	do.	do.
Repairs to Farm Buildings on Glebe, Ashley Rectory	.....	do.	do.
Repointing, Washing, & Painting 213A, Barking-rd., E.	.....	F. Holbrook, Secretary	do.
Scavenging (Narborough)	Parochial Com. for Blaby R.D.C.	T. Betts, 20, Leopold-street, South Wigston	do.
Two Houses, Prudoe-on-Tyne	.....	A. Jerdan, 8, Victoria-terrace, Prudhoe	do.
Bowling Green	Wakefield Cricket Club	R. W. Hope Bunt, 11, King-street, Wakefield	do.
*(A) ERECT. OF SCHLS. (B) VENTI., ETC., SAME	Handsworth Education Committee	J. P. Osborne, Architect, 95, Colmore-row, Birmingham	do.
*EXT. HAM, ETC., FACTORY, HARROW, MIDDX.	Messrs. J. Adamson & Co., Ltd.	Johnstone Bros., Architects, 39, Lowther-street, Carlisle	do.
*PAINTING WORKS, HYDE PARK BARRACKS	War Department	Royal Engineer Office, 41, Charing-cross, S.W.	do.
*ROOF REPS., ALL SAINTS' CH., ROTHERHITHE	The Vicar and Churchwardens	The Vicar, All Saints' Vicarage, Lower-road, Rotherhithe	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*APPOINTMENT OF ARCHITECT	Northumberland Education Com.	250*l.*	No date.

Those marked with an asterisk (*) are advertised in this number. *Competitions*, —. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvi.

ENGLISH SHEET GLASS IN CRATES *(continued)*.

32 oz. thirds	5½d.	per ft. delivered.
„ fourths	4½d.	„ „
Fluted Sheet, 15 oz.	3½d.	„ „
„ 21 oz.	4½d.	„ „
⅛ Hartley's Rolled Plate	2d.	„ „
3/16 „ „ „	2½d.	„ „
¼ „ „ „	2¾d.	„ „

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	8½
„ „ „ in barrels	„	0	1	10
„ „ „ in drums	„	0	2	0
Boiled „ „ in pipes	„	0	1	11
„ „ „ in barrels	„	0	2	0
„ „ „ in drums	„	0	2	2
Turpentine, in barrels	„	0	3	9
„ in drums	„	0	3	11
Genuine Ground English White Lead	per ton	19	15	0
Red Lead, Dry	„	19	5	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BILLINGSHURST.—For new post-office, Billingshurst. Mr. C. H. Burstow, architect, Horsham:—

W. Joyes	£1,140	E. Wadey	£1,075
G. Potter	1,123	Reeves & Post, Rudgwick*	1,080
Rowland Bros.	1,099		

BRECON.—For alterations, additions, etc., at Ffrwdgrech, for Mr. D. Evans. Mr. B. L. Pritchard, architect, 22, Castle-street, Brecon:—

B. Jenkins	£2,460 0	R. L. Williams, Brecon*	£2,397 10
N. Bagley	2,455 0		

BARNES.—For erection of cemetery chapel and keeper's lodge, for the Urban District Council of Barnes. Mr. R. B. Rowell, architect, Triangle Corner, East Sheen, S.W. Quantities by the architect:—

F. Mark	£2,937	Millman & Co.	£2,644
W. Hyde	2,896	Speechley & Smith	2,632
Sycamore Works	2,830	J. Dorey & Co., Ltd.	2,610
G. Wimpey & Co.	2,810	Soole & Sons	2,600
Dean & Co.	2,789	Wisdom Bros.	2,570
J. W. Brooking	2,784	T. & J. Foster	2,566
W. J. Renshaw	2,750	E. Wall	2,524
J. Barker & Co., Ltd.	2,719	R. T. Hughes & Co., Ltd., Portobello Works, Mortlake†	2,505
T. Bendon	2 695		
Myall & Upson	2,670		

BECKENHAM.—For extension of the boiler and engine house, etc., of electric light works, Arthur-road, for the Urban District Council. Mr. J. A. Angell, Surveyor to Council:—

Holliday & Greenwood	£2,555	W. H. Hyde	£1,970
Wallis & Sons, Ltd.	2,189	H. Kent	1,937
Patman & Fotheringham	2,173	W. Wallis	1,927
Cropley Bros., Ltd.	2,159	H. Heathfield	1,919
H. Lovatt, Ltd.	2,028	J. Smith & Sons	1,914
Jones & Andrews	2,020	F. & G. Foster, Suffolk Works, Norwood Junction*	1,798
B. E. Nightingale	1,978		

BECKENHAM.—For extension to the elementary schools, Arthur-road, for the Urban District Council Education Committee. Mr. J. A. Angell, Architect to the Committee:—

Martin, Wells, & Co.	£7,015	W. H. Hyde	£6,510
Patman & Fotheringham	6,943	Syme & Duncan	6,490
G. Parker	6,888	H. Kent	6,420
F. W. Green	6,792	C. H. Price	6,358
R. A. Lowe	6,790	Cropley Bros.	6,343
H. Heathfield	6,728	Nightingale	6,318
Wallis & Sons	6,712	Hawkins & Co.	6,207
Holliday & Greenwood	6,581	F. & G. Foster	6,071
		Jones & Andrews, Beckenham*	6,037

BRENTWOOD.—For painting and distempering works at Highwood School, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

F. W. Burtwell	£1,091 0 0	W. Hussey	£579 0 0
G. Miller & Son	1,090 0 0	Woollaston Bros.	550 0 0
F. W. Jarvis	855 0 0	R. Iles, Ltd.	533 0 0
E. Proctor & Son	724 0 0	H. Munn & Son	526 0 0
W. E. Westgate	684 0 0	J. S. Fenn	459 10 0
J. F. Penn	680 5 0	R. Woollaston & Co., 22, Laceystreet, Bow, E.*	394 0 0
G. Barker	629 0 0		
J. McKenzie	588 18 3		

CARDIFF.—For 1,050 lineal yds. of 4 ft. 9 in. diameter sewer, 1,905 lineal yds. 13 ft. diameter reservoir sewer, partly in tunnel, and 542 lineal yds. of 36 in. diameter cast-iron outfall culvert, together with embankment and bridge across Sully Brook (Western District Main Outfall Sewer, Contract No. 6), for the Corporation. Mr. W. Harpur, Borough Engineer, Cardiff. Quantities by Borough Engineer:—

J. Dickson	£144,790 7 3!
W. Williams	131,096 0 0
T. Taylor	129,644 17 2
G. Lawson	108,734 10 0
J. Riley	106,017 3 8
J. Jackson	104,788 15 4
J. H. Macdonald	102,628 0 0
W. Underwood & Bro.	96,489 19 4
S. W. Harrison & Co.	92,251 0 0
W. Jones & Son	89,891 6 10
J. & T. Binns	89,663 11 6
Hay, Lawton, & Co.	89,482 9 2
Whyte & Co.	87,945 2 4
Barnes, Chaplin, & Co.	87,113 6 5
J. Strachan	85,362 8 5
L. P. Nott	79,395 19 6
G. Pollard & Co., Ltd.	79,189 4 6
Kelletts, Ltd.	77,664 1 0
R. H. B. Neal, Ltd.	77,133 7 4
J. Best	72,149 12 10
Bentley & Loch	68,909 11 5
Muirhead, Greig, & Matthews	67,110 4 6
G. Rutter, Barry*	57,947 0 0!

CARDIFF.—For 2,940 lineal yds. of 4 ft. 9 in. diameter circular sewer, partly in tunnel and manholes (Western District Main Outfall Sewer, Contract No. 5), for the Corporation. Mr. W. Harpur, Borough Engineer, Cardiff. Quantities by Borough Engineer:—

W. Williams	£49,259 0 0!	Barnes, Chaplin, & Co.	£28,691 2 0
J. Dickson	38,336 16 0	W. Underwood & Bro.	28,612 16 8
Whyte & Co.	37,960 6 0	J. Best	28,011 15 0
J. Jackson	37,632 18 0	L. P. Nott	27,063 15 0
J. Strachan	37,102 0 0	Muirhead, Greig, & Matthews.	24,659 0 0
T. Taylor	36,606 15 6	S. Wood	24,165 0 0
R. H. B. Neal, Ltd.	34,802 10 0	Kelletts, Ltd.	24,102 10 0
G. Lawson	33,297 10 0	G. Rutter	23,107 0 0
Hay, Lawton, & Co.	32,943 18 4	J. H. Macdonald	21,415 0 0
S. W. Harrison & Co.	32,804 0 0	Bentley & Loch, Leicester*	18,677 12 0!
G. Pollard & Co., Ltd.	31,304 0 0		
W. Jones & Son	30,799 0 0		
J. & T. Binns	29,667 6 0		

CARDIFF.—For painting (1) The Clarence Bridge (over the River Taff); (2) The James-street Bridge (over the Glamorganshire Canal), for the Corporation. Mr. W. Harpur, Borough Engineer, Town Hall, Cardiff:—

	Clarence Bridge.	James-st. Bridge.
C. Boyett	£847 0	£123 0 0
Cooper Bros.	423 10	72 10 0
Gough Bros., Cardiff	362 0	58 0 0*
J. Casey	226 10	101 17 6
Metallic Paint Co., Cardiff	225 10*	95 10 0

CARDIFF.—For panelling and seating the Council Chamber in the new Town Hall, for the Corporation:—

E. Turner & Sons, Cardiff £3,000

CARDIFF.—For 1,800 lineal yds. of 4 ft. 9 in. diameter circular sewer, wholly in tunnel, and steel pipe arch, 200 ft. span, over River Ely (Western District Main Outfall Sewer, Contract No. 4), for the Corporation. Mr. W. Harpur, Borough Engineer, Cardiff. Quantities by Borough Engineer:—

J. Dickson	£50,727 10 5!	W. Jones & Son	£32,893 13 2
W. Williams	46,907 0 0	R. H. B. Neal, Ltd.	32,810 15 6
Whyte & Co.	43,561 10 9	J. & T. Binns	32,716 3 10
J. Jackson	39,903 17 6	W. Underwood & Bro.	32,491 13 3
J. Strachan	39,644 14 7	Hay, Lawton, & Co.	31,656 1 8
G. Lawson	38,851 4 5	J. Best	30,453 0 8
T. Taylor	38,331 11 1	G. Rutter	27,803 0 0
J. H. Macdonald	36,729 0 0	Kelletts, Ltd.	26,501 11 11
Barnes, Chaplin, & Co.	36,317 19 2	S. Wood	23,693 8 0
G. Pollard & Co., Ltd.	36,136 10 5	Bentley & Loch, Leicester*	23,527 8 3!
Muirhead, Greig, & Matthews	35,182 1 3		
S. W. Harrison & Co.	34,258 13 0		
L. P. Nott	32,972 4 1		

CARSHALTON (Surrey).—For making roads, laying new tramway lines, etc., at the Southern Hospital, for the Metropolitan Asylums Board. Messrs. Treadwell & Martin, architects, Charing Cross House, 29A., Charing Cross-road, W.C.:—

J. Shelborne & Co.	£16,500 0 0	W. H. Wheeler	£14,431 0 0
E. B. Yewen	15,900 0 0	W. Manders	13,925 4 6
E. Iles	15,900 0 0	Fry Bros.	13,906 0 0
G. Bell	15,632 0 0	W. Johnson & Co., Ltd.	13,591 0 0
W. Griffiths & Co., Ltd.	15,500 0 0	Cunningham, Forbes, & Co.	13,276 2 3
Road Maintenance and Stone Supply Co., Ltd.	14,997 0 0	T. Adams, Wood Green, N.*	11,800 0 0
S. Kavanagh & Co.	14,853 0 0	Grounds & Newton‡	11,265 0 0

‡Withdrawn.

CHELMSFORD.—For pipe-laying, Springfield and Great Baddow, for the Rural District Council. Mr. J. Dewhurst, engineer, Avenue-chambers, Chelmsford:—

A. Streeter & Co., Godalming* .. £911 16 6

[Twenty-eight other tenders received.]

CHESHUNT.—For erecting a new petty sessional court and technical school, for the Hertfordshire County Council. Mr. U. A. Smith, County Surveyor, Hatfield:—

L. & W. H. Patman	£3,749 0 0
A. F. Almond	3,585 0 0
Parren & Son	3,579 18 10
R. Archer	3,525 0 0
Miskin & Son	3,408 0 0
Jennings & Grenfell	3,366 0 0
Rayment & Son	3,297 0 0
Almond & Son	3,275 0 0
A. Fairhead & Son	3,244 0 0
J. Thomas	3,155 0 0
G. Henson & Son	3,145 1 7½
C. Wall, Ltd.	3,129 0 0
A. Monk	3,100 0 0
Moss & Co.	3,100 0 0
Patrick & Co.	3,089 0 0
W. Lawrence & Co.	3,072 0 0
Kettering Co-operative Builders, Ltd.	2,948 0 0
P. R. Paul, Waltham Abbey*	2,941 9 5

CLAYTON.—For constructing 448 lineal yds. of 9-in. earthenware pipe sewer, for the Urban District Council. Mr. T. Hutton, Surveyor to the Council:—

L. Garth, Clayton* £163 6

COLCHESTER.—For erecting a barley drying kiln at The Hythe, for Messrs. W. Brooks & Sons. Mr. J. W. Start, architect and surveyor, Colchester:—

J. C. Smith	£495 0 0	Dobson & Son	£428 0 0
Grimwood & Son	489 0 0	C. Deaves	418 0 0
J. McKay	470 0 0	W. Chambers	394 17 6
E. Saunders	448 0 0	Everett & Son, Colchester*	393 0 0
Oak Building Co.	436 0 0		

DARENTH.—For cast-iron storage tank and alterations to water mains at Darenth Asylum, near Dartford, Kent, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

Hunt Bros. (Oldbury), Ltd.	£636 14 0
Ashmore, Benson, Pease, & Co., Ltd.	632 0 0
Watford Engineering Works	420 0 0
Hayes, May, & Co.	420 0 0
Enness Bros.	367 0 0
S. Russell & Sons	355 0 0
T. Potter & Sons, Ltd., 44, South Molton-street, Oxford-street, W.*	345 0 0

DARENTH. — For cleaning and painting works, Darenth Asylum, for the Metropolitan Asylums Board. Quantities by Messrs. Taperell & Hoare, 9, John-street, Adelphi, W.C.:—

R. Iles, Ltd.	£4,285 18 0	J. S. Fenn	£2,398 0 0
W. J. Simms & Sons	3,612 0 0	M. McCarthy	2,357 0 0
H. Kent	3,491 0 0	W. Hussey, 32, Albert Hall Mansions, Kensington Gore*	2,100 0 0
M. Batchelor	3,168 0 0		
L. Kazak	2,738 9 4		
Enness Bros.	2,720 0 0		
E. Proctor & Son	2,565 0 0		

DARTFORD (Kent).—For painting works at Joyce Green small-pox hospital, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief. Quantities by W. H. Barber & Son, 22, Buckingham-street, W.C.:—

R. Iles, Ltd.	£9,615 12 0	M. McCarthy	£6,766 0 0
H. Kent	7,869 0 0	W. J. Simms & Sons, 160, Derby-road, Nottingham*	6,098 0 0
Enness Bros.	7,507 0 0		
H. Goodwin	7,475 17 11		
E. Proctor & Son	6,940 0 0		
L. Kazak	6,821 3 2		

DEVON.—For mistress house, and water supply, Doddiscombsleigh Council School, for the Devon Education Committee. Mr. P. Morris, Architect to the Committee:—

	House.	Water Supply.
Westcott, Austin, & White.	£528 0 0	£44 0 0
F. A. Stacey	515 0 0	49 0 0
E. Gillard	515 5 0	30 0 0
A. J. Barker	522 0 0‡	—
Page Bros.	465 0 0	36 0 0
F. C. Francis	448 15 0	*44 0 0
L. Smale	425 0 0	52 0 0
L. Bearne	391 6 10*	75 7 9

‡Tender for both.

GUILDFORD. — For structural repairs, external painting and internal whitening, etc., at Stoughton Schools, for the Education Committee. Mr. E. L. Lunn, architect and surveyor, 36, High-street, Guildford:—

C. G. Fowler	£264 10	A. Franks	£223 0
R. Smith	257 0	A. F. Gammon	215 0
Trebe & Robinson	225 0	F. W. Killick, Guildford*	209 0
Higgs & Outhwaite	225 0		

HALIFAX.—For rebuilding Lee Mount Infants' School, for the Education Committee. Mr. J. Lord, Borough Engineer, Town Hall, Halifax:—

Masons, etc.: E. Balmforth & Sons, Halifax	£1,025 0 0
Carpenter and Joiner: C. J. Norvell, Halifax	604 11 10
Slaters and Plasterers: J. Bancroft & Son, Halifax	144 10 0
Ventilating: J. Stott & Co., Oldham	360 0 0
Iron'ounders: J. Bagshaw & Sons, Batley	71 11 5
Plumber and Glazier: S. S. Thompson, Halifax	174 0 0
Concretors: J. Bancroft & Son, Halifax	23[illegible] 3 1
Painters: G. H. Moody & Co., Halifax	35 16 9

HAMPTON (Middx.)—For the construction of filter-beds, laying of pipes, culverts, etc., for the Metropolitan Water Board:—

J. T. Firbank, Ltd.	£67,664 16 8	J. A. Ewart	£55,078 6 5
G. Bell	67,405 8 5	J. Aird & Sons	49,952 7 2
T. Docwra & Son	59,232 3 4	Holloway Bros., Ltd.	47,800 0 0
J. Mowlem & Co., Ltd.	56,421 0 0	Kirk & Randall*	46,311 0 0

HANLEY.—For erecting Wesleyan Church, Bottes-low-street, for the Trustees. Mr. W. Campbell, architect, Hanley. Quantities by architect:—

For Erection of Church.

S. Heath, Basford, Stoke-on-Trent* .. £1,027

For Seating Only.

E. Malkin, Hanley* £91 10

HENDON.—For the erection of a block of shops in the Edgware-road. Mr. E. A. Tyler, architect, 19, Melody-road, Wandsworth, S.W.:—

Ford & Walton	£5,485!	Dilley & Cockerill	£2,855
W. Tout	3,866	J. Cronk*	2,794!
Perren	3,030		

HEREFORDSHIRE.—For alterations and additions to house on the Whitney Estate, for Mr. Peter Coats, of Paisley. Messrs. Groome & Bettington, architects and surveyors, Palace-chambers, Hereford. Quantities by architects:—

		Deductions as per form of Tender.
E. W. Wilks	£1,570 0 0	£152 0 0
W. Powell	1,549 12 6	189 8 3
W. P. Lewis & Co.	1,490 0 0	181 7 6
Beavan & Hodges	1,462 0 0	169 2 0
C. Cooke	1,430 0 0	177 6 2

HORSHAM.—For redrainage Horsham Workhouse premises, for the Guardians of the Horsham Union. Mr. C. H. Burstow, architect, 6, West-street, Horsham. Quantities by the architect:—

W. H. Hyde	£1,013 0 0	H. J. Smith & Son	£745 6 0
T. Robinson	975 6 0	Davey & Roberts	737 17 2
H. Braithwaite & Co.	899 0 0	Lindfield & Son	717 0 0
A. C. Soan	893 16 0	Rowland Bros.	679 0 0
W. T. Toogood & Co.	832 12 2	Potter Bros., Horsham*	655 0 0
E. Tabor	829 10 0	G. G. Rayner	653 0 0
Hillman & Murrell	745 11 11	Artistic Construction Co.,	529 10 0

KYLEAKIN.—For extension of water supply to the village of Kyleakin, Skye, for the Skye District Committee of the County Council of Inverness-shire. Mr. J. A. H. Mackenzie, C.E., Portree. Quantities by Engineer:—

Supply of Cast-Iron Pipes and other Castings.

Watson, Gow, & Co., Ltd., Etna Foundry, Glasgow‡.

Pipe Trenches, Laying and Jointing of Pipes, and Building Reservoir.

G. G. Macintosh, Kyle, of Lochalsh‡.

‡ Works tendered for on schedules of prices. Both over £100.

LINTON.—For the provision, laying, and jointing of about 3,000 yds. of 9-in. stoneware pipe sewers, together with all manholes, lamp-holes, and flushing shafts, the construction of two sewage tanks, and other works, for the Repton Rural District Council. Messrs. Willcox & Raikes, engineers, 63, Temple-row, Birmingham:—

Smith & Co.	£2,523 15 1	E. Orton	£1,777 0 0
T. J. Mason	2,337 4 9	Beighton & Berry	1,696 8 0
Steer & Pearce	2,148 16 0	D. Roberts	1,695 15 0
J. Roberts	2,065 9 0	E. Boore	1,684 7 4
Lane Bros.	2,059 10 0	Cannam Bros.	1,643 12 6½
Sutherland & Thorpe	2,029 15 3	E. Blewitt	1,622 15 10
J. Walker & Sons	1,950 0 0	A. Jewell	1,613 10 6
Parker & Sharp	1,915 19 0	H. Ashley	1,583 0 0
Lowe & Sons	1,865 0 0	W. G. Willmott	1,498 0 0
J. A. Meredith	1,815 0 0	Holmes & Sons	1,489 0 0
Jameson & Sons	1,813 6 6	J. & J. Warner, Mickleover*	1,482 0 0
Brebner & Co.	1,809 0 0		

LONDON.—For the extension of Mile End Public Library, for the Stepney Borough Council :—

F. & F. Wood	£6,523	W. H. Hyde	£5,698
Martin, Wells, & Co., Ltd.	6,500	H. Kent	5,691
J. Shelbourne & Co.	5,953	B. E. Nightingale	5,655
L. F. Lamplough	5,900	Patman & Fotheringham, Ltd., Park-street, Islington, N.*	5,653
G. Barker	5,798		
A. E. Symes	5,745		
S. E. Moss & Co.	5,700	A. G. Crisp	5,500

[Borough Engineer's estimate, £5,900.]

LONDON.—For erecting the North Islington Branch Library, Manor Gardens, Upper Holloway, N., for the Public Libraries Committee of Islington Borough Council :—

General Builders, Ltd.	£7,715	Sabey & Son, Ltd.	£7,303
C. Wall, Ltd.	7,564	L. H. & R. Roberts	7,144
J. & M. Patrick	7,534	J. Grover & Son	7,049
G. S. S. Williams & Son	7,484	C. P. Roberts	6,987
H. J. Williams, Ltd.	7,462	Patman & Fotheringham, 100, Theobald's-road, W.C.*	6,756
C. Dearing & Son	7,322		
E. Lawrance & Sons	7,310		

LONDON.—For laying Norwegian granite setts and creosoted deal blocks, Rushey-green, High-street, Loampit-vale, etc., Lewisham, for the Lewisham Borough Council. Mr. E. Van Putten, M.Inst.C.E., Borough Surveyor :—

Norwegian Granite Setts and Wood Paving.
Dick, Kerr, & Co., Cannon-street, E.C. .. £18,443 17 3

LONDON.—For kerbing, artificial stone paving, metalling, and channelling work, for the Lewisham Borough Council. Mr. E. Van Putten, M.Inst.C.E., Borough Surveyor :—

Making-up Culverley-road.
Fry Bros., Greenwich £1,874

Artificial Stone Paving, Culverley-road.
Granite Flag Co., Willesden £828

Making-up Queenswood-road.
B. Martin, Brockley £977 12

Artificial Stone Paving, Queenswood-road.
W. Pearce, Forest Hill £370

LONDON.—For works at the London College of Music, 47, Great Marlborough-street, W. Mr. W. Leonard Dowton, architect, 44, Theobald's-road, Bedford-row, W.C. :—

Contract No. 1.—Painting and Decorating.

Head & Thurlow	£285 0 0	C. Ansell	£258 0 0
Patman & Fotheringham	273 0 0	Paish, Lane, & Co.	224 4 8
G. H. & A. Bywaters & Sons	258 0 0	M. P. Shields*	221 15 0
		F. Dawes	219 0 0
		W. T. Champion	195 10 0

Contract No. 2—Remodelling Two Rooms, Forming New Corridor, with W.C. and Lavatory, etc.

Head & Thurlow	£350 0 0	G. H. & A. Bywaters & Sons*	£297 0 0
Paish, Lane, & Co.	334 13 8	F. Dawes	287 0 0
Patman & Fotheringham	312 0 0	C. Ansell	282 0 0
		W. T. Champion	280 10 0

LONDON.—For medical school and nurses' home, Gower-street, W.C. Mr. Paul Waterhouse, architect, New Cavendish-street, Portland-place, W. :—

Norman & Burt	£83,300	Dove Bros.	£77,350
W. Downs	82,954	Higgs & Hill	76 884
G. Parker	82,360	F. Minter	74,790
Hibberd Bros.	81,216	J. Greenwood, Ltd.	74,746
J. Simpson & Son	79,456	Longden & Son	74,592
Ford & Walton	78,481	J. Carmichael*	73,475

SOUTHWOLD.—For sea defence works, for the Town Council. Mr. A. E. Carey, engineer, Westminster-chambers, 3, Victoria-street, Westminster, S.W. :—

A. G. Osenton	£3,000 0 0	A. Thorne	£2,120 0 0
A. Fasey & Son	2,657 16 0	J. C. Trueman	2,112 0 0
T. W. Pedrette	2,645 0 0	Kirk & Randall	2,067 4 0
Pedrette & Co.	2,571 18 0	J. H. Vickers	2,038 0 0
W. Fasey	2,470 10 0	Pethick Bros.	1,875 0 0
W. Gradwell	2,351 19 2	E. H. Page, Andrew's-buildings, Queen-street, Cardiff*	1,418 2 0
G. Double	2,325 7 0		
W. Rigby	2,160 0 0		
Campbell & Handman	2,149 15 3		
G. Wimpey & Co.	2,127 0 0		

SOUTH BRENT.—For alterations and additions to Council school, for the Devon County Education Committee. Mr. P. Morris, Architect to the Committee :—

R. Veale & Son	£1,413 7 6	F. J. Badcock	£1,055 0 0
Reeves & Full	1,196 0 0	F. A. A. Stacey	1,050 0 0
Parker Bros.	1,190 0 0	P. Carwithen	870 0 0
F. C. Francis	1,096 0 0	G. P. Finch*	798 0 0
Johns & Son	1,069 0 0		

[Architect's estimate, £980.]

TORQUAY.—For erecting the Carnegie Library, for the Town Council. Mr. T. Davison, architect, 28, Great Ormond-street, London, W.C. Quantities by Messrs. C. Sewell, Appleton, & Vincent Cattermole Brown, surveyors :—

	Beer Stone.		Portland Stone.
J. Crockerell	£9,240	....	£9,494
H. Phare	8,936	....	9,125
W. E. Bennett	8,772	....	8,807
F. J. Badcock	8,686	....	8,890
Bird & Pippard	8,400	....	8,650
T. Vanstone	8,150	....	8,312
Woodman & Son	8,058	....	8,416
H. C. Jackman	8,050	....	8,617
S. Roberts	7,998	....	8,148
Pethick Bros.	7,994	....	8,494
Wilkins & Son	7,969	....	8,527
R. F. Yeo & Son	7,815	....	8,207
J. C. & W. Watson	7,650	....	7,970
F. J. Stanbury	7,490	....	7,632
H. C. Goss	7,423	....	7,707
W. E. Blake	7,100	....	7,430
R. E. Narracott, Stoke Gabriel*	6,732	....	7,081

WALSALL.—For erecting a senior mixed department for 312 children and manual instruction centre for 20 at Infants' School, Wolverhampton-road, for the Education Committee. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall. Quantities by architect :—

G. Insley	£3,360 0 0	J. Hall & Son	£3,197 16 2
C. Griffiths	3,500 0 0	S. Wootton	3,095 0 0
W. & J. Webb	3,460 0 0	W. Kendrick & Sons	3,020 0 0
W. H. Gibbs	3,444 0 0	G. E. Jackson	3,000 0 0
J. & F. Wootton	3,430 17 9	H. Gough & Son	2,990 0 0
T. Mason	3,336 0 0	T. Tildesley	2, 89 0 0
H. Willcock & Co.	3,300 0 0	J. Hicker & Sons	2,957 0 0
Brockhurst & Wood	3,295 0 0	T. Hardy, West Bromwich*	2,939 0 0
F. L. Jones	3,250 0 0		
E. Mallin	3,250 0 0		
W. Wistance	3,248 0 0		

WIDNES.—For erecting central premises for the Runcorn and Widnes Industrial Co-operative Society, Ltd. Mr. W. D. T. Munford, architect, Preston. Quantities by architect :—
J. Gerrard & Sons, Swinton, Manchester* .. £9,253

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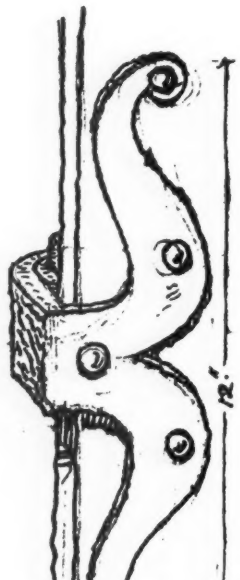
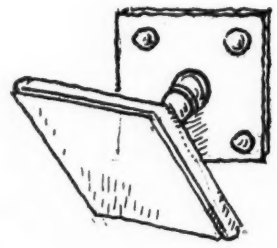
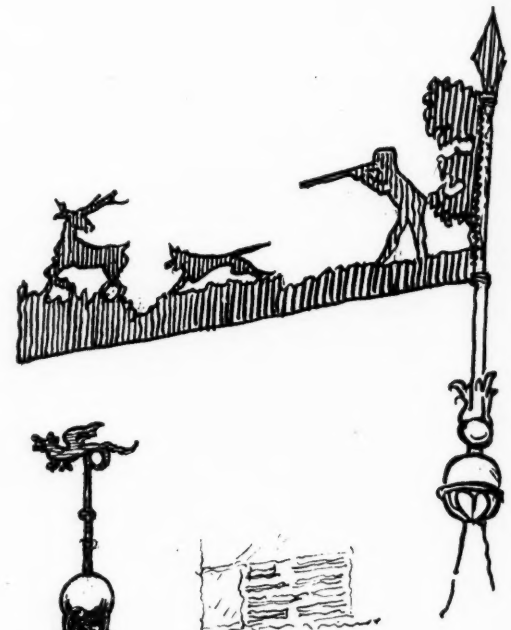
GLASGOW: 47 & 49. St. Enoch Square.
BRISTOL: Ashton Gate Works, Coronation Road.







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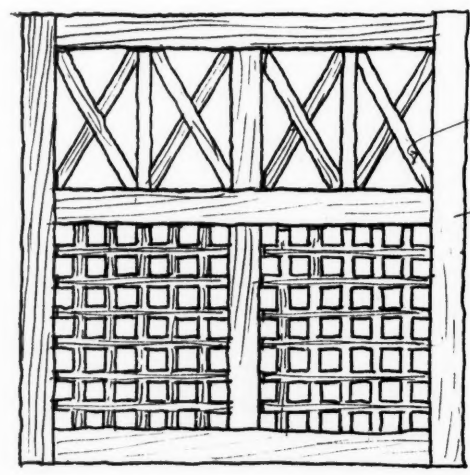
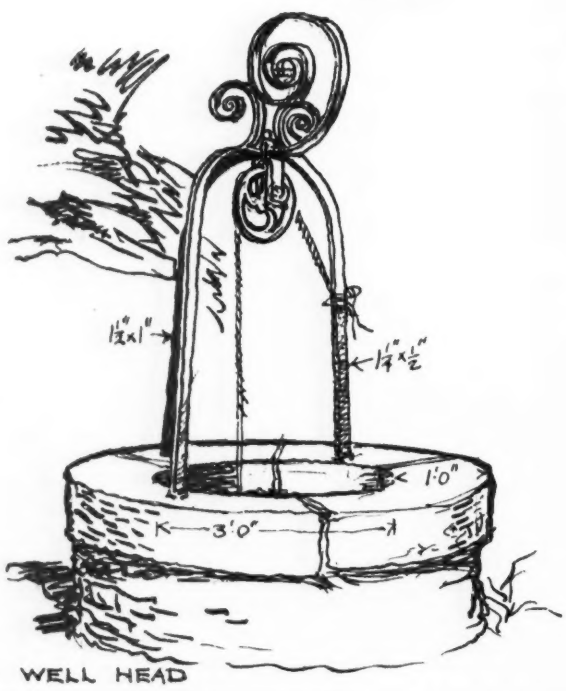
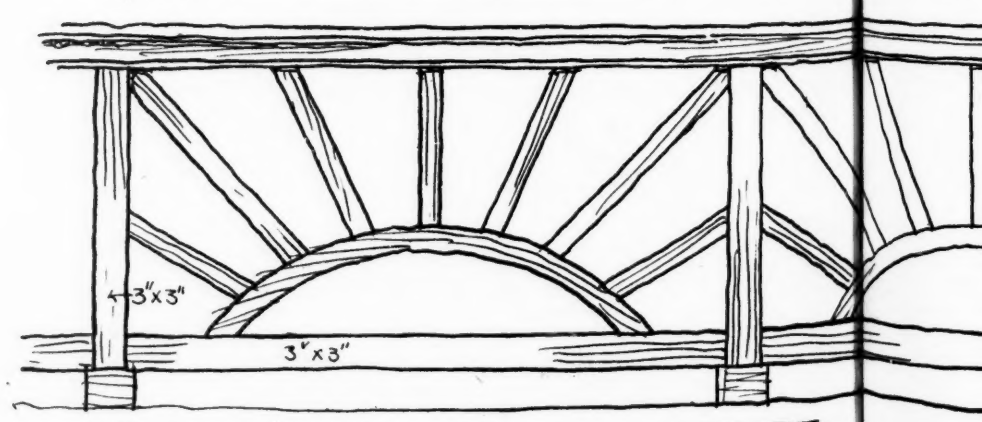


TWO GARDEN GATES



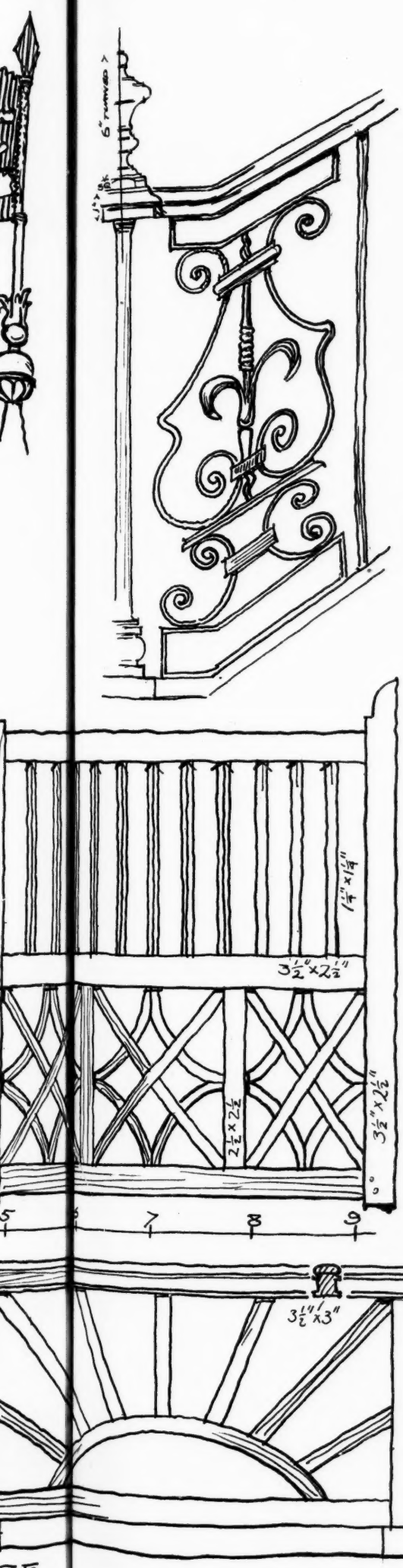
WELL HEAD

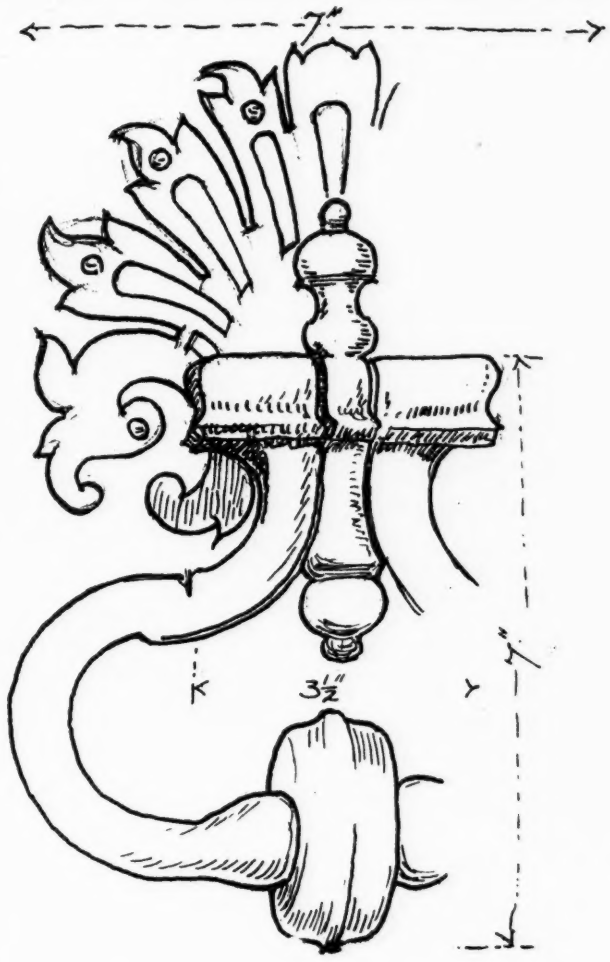
SCALE OF FEET

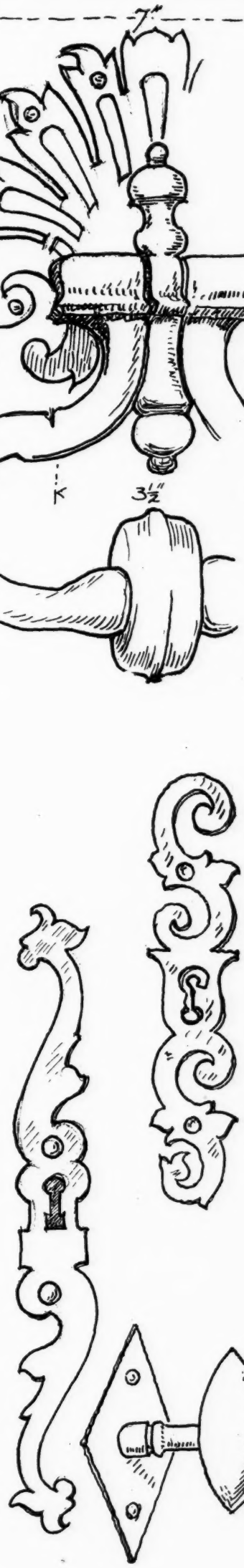


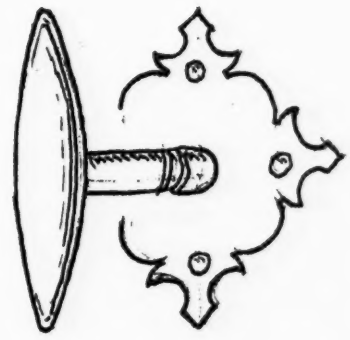
WOOD BALUSTRADE TO A BRIDGE

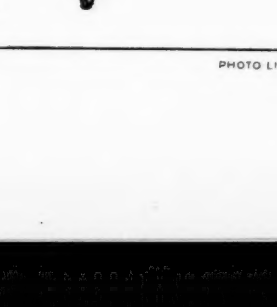
SHEET OF DETAILS OF WOOD AND











GE

OOD AND IRONWORK

PHOTO LITHO. SPRAGUE & C° LT° 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

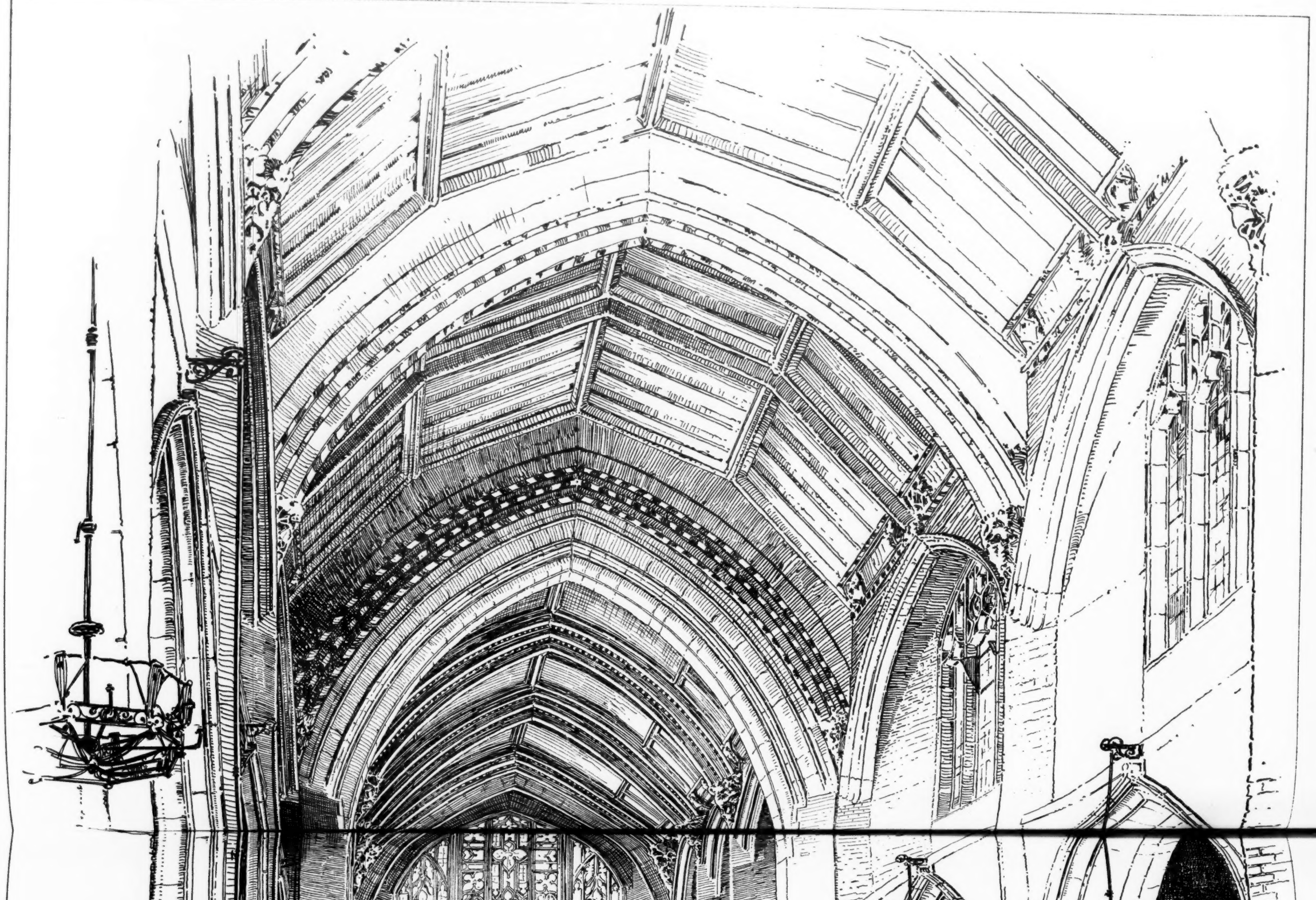
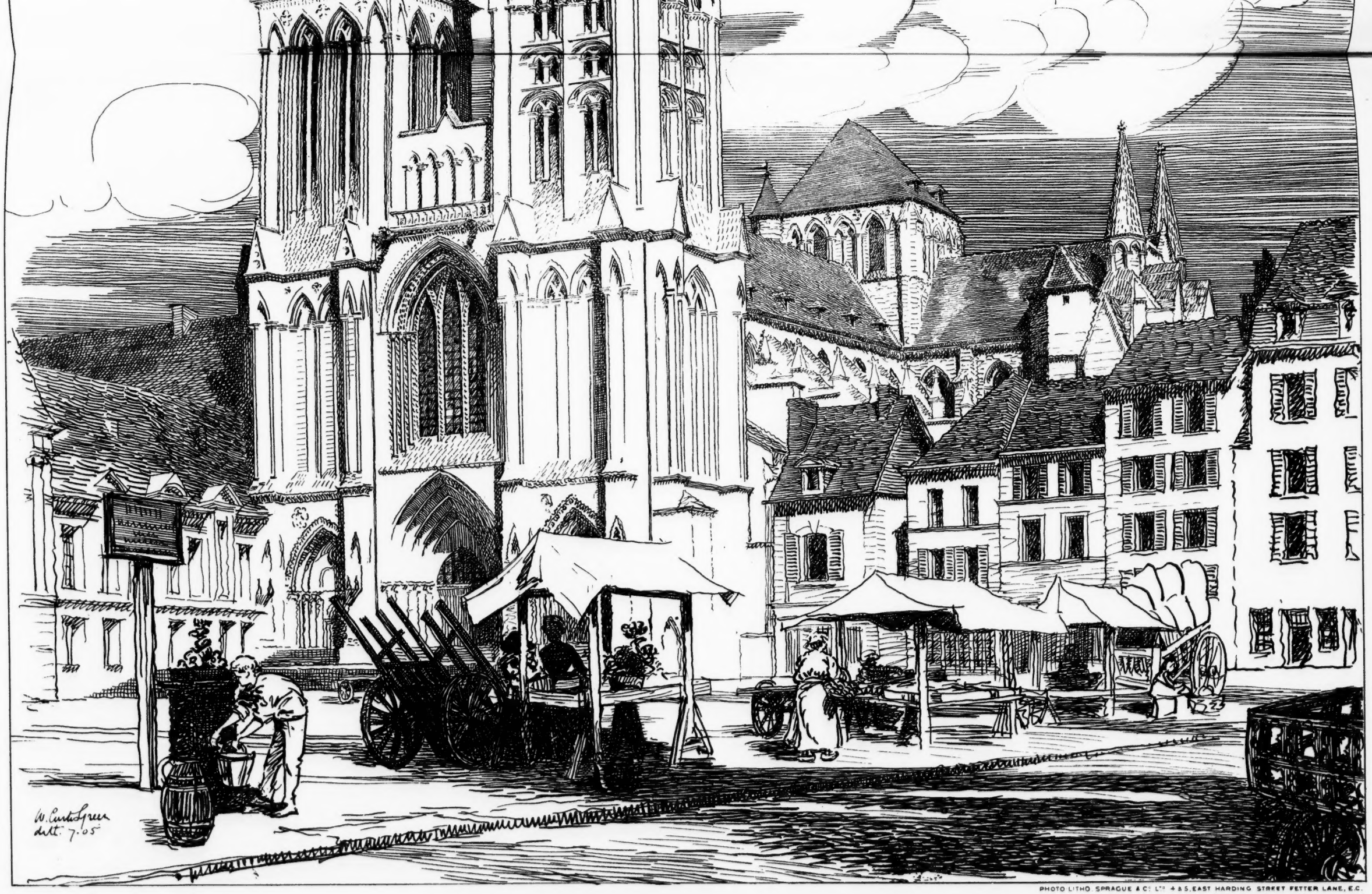


PHOTO LITHO SPRAGUE & C° LT° 435 EAST HARDING STREET FETTER LANE E.C.

INTERIOR, ST. AGATHA'S CHURCH, BIRMINGHAM.—Mr. W. H. Bidlake, A.R.I.B.A., Architect

LISIEUX. CATHEDRAL.



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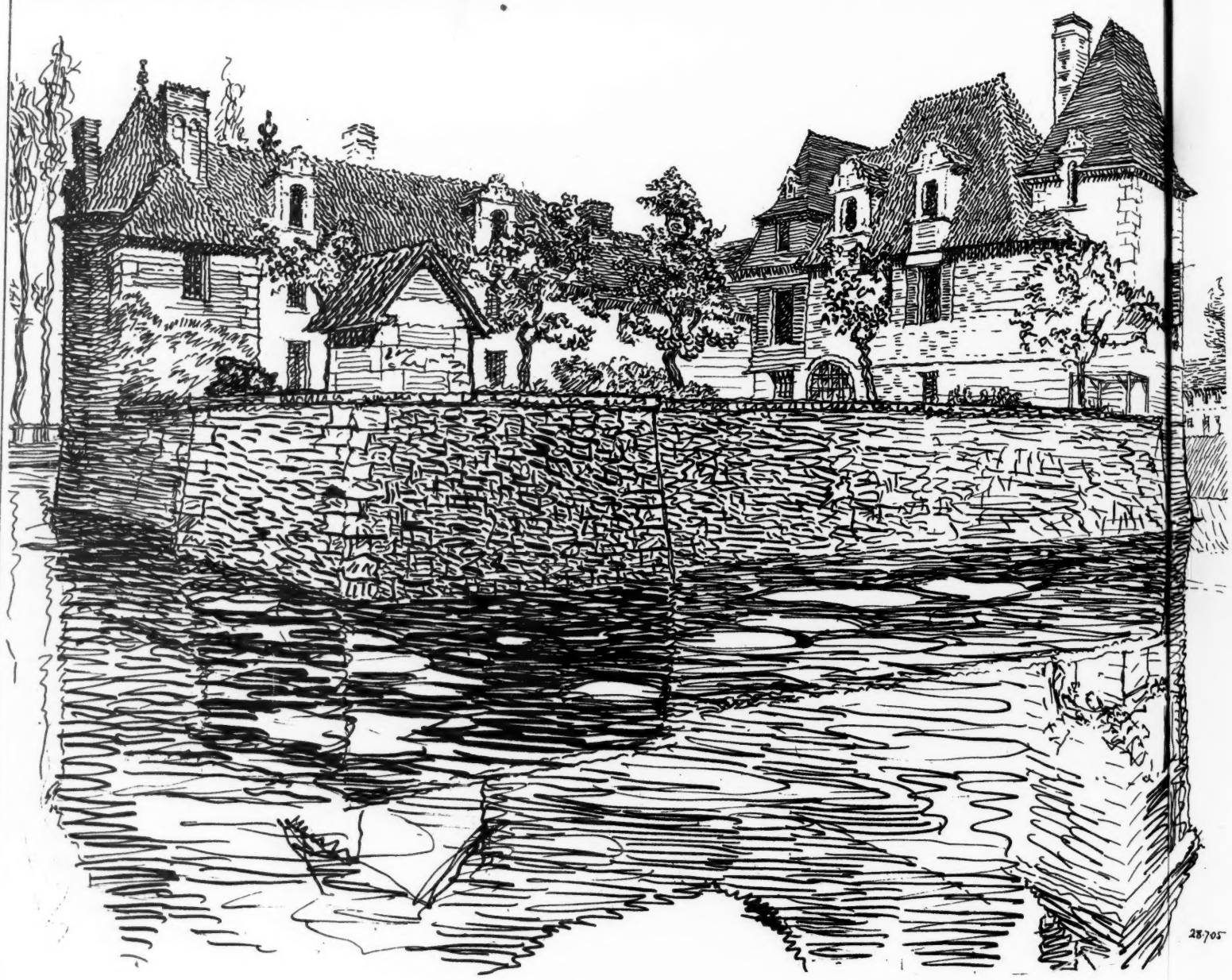
SKETCHES WITH THE ARCHITECTURAL ASSOCIATION EXCURSION IN NORMANDY

VICTOR FONTFOL CHÂTEAU



28.7.05

HOTÔT FARM

W. Curtis Green del
28.7.05

PLACE D'ARMES
CAUDEBEC.

LE CHÂTEAU DE SAINT-GERMAIN DE LIVET

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